



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

June 27, 2017

Mr. Regie Castellaw, P.E., General Manager
e-copy: rcastellaw@budutil.com
Brownsville Energy Authority

Subject: **NPDES Permit No. TN0062367**
Brownsville Energy Authority WWTP
Brownsville, Haywood County, Tennessee

Dear Mr. Castellaw:

In accordance with the provisions of the Tennessee Water Quality Control Act, Tennessee Code Annotated (T.C.A.), Sections 69-3-101 through 69-3-120, the Division of Water Resources hereby issues the enclosed NPDES Permit. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application. Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment. Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

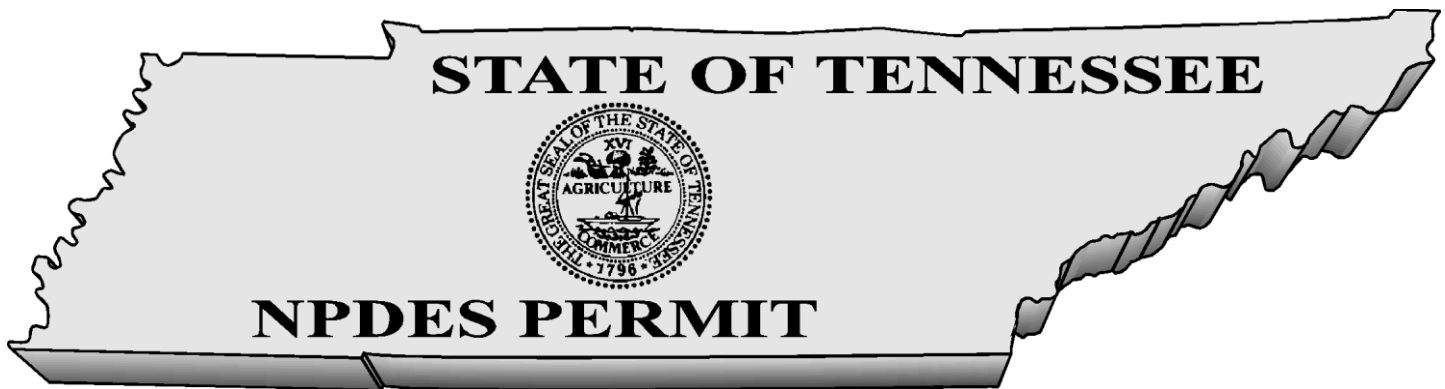
If you have questions, please contact the Jackson Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Paul Higgins at (615) 532-1178 or by E-mail at Paul.Higgins@tn.gov.

Sincerely,

Vojin Janjic
Manager, Water-Based Systems

Enclosure

cc: Permit File & Jackson Environmental Field Office
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. Scott Daniel, P. E., J. R. Wauford & Company, Consulting Engineers, Inc., scottd@jrwauford.com
Mr. J. Gregory Davenport, P.E., President, J.R. Wauford & Company Consulting Engineers, Inc., gregd@jrwauford.com
Mr. Brian Paddock, Attorney, Save Our Cumberland Mountains (SOCM), bpaddock@twlakes.net
Mr. Nicholas T. Crafton, P.E., Chemical Engineer, , ncrafton@bellsouth.net
Ms. Dana L. Wright, Director of Policy and Legislative Affairs, TCWN, dana@tcwn.org
Mr. Jimmy West, Special Projects Coordinator, TN Dept. of Economic & Community Development, Jimmy.West@tn.gov
Mr. Gary Bullwinkel, gbullwin@yahoo.com



No. TN0062367

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102**

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger: **Brownsville Energy Authority WWTP**

is authorized to discharge: **treated municipal wastewater discharged to a common Outfall 001 from dual trickling filter and an aerated lagoon**

from a facility located: **in Brownsville, Haywood County, Tennessee**

to receiving waters named: **Hatchie River at mile 76.3**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on: **July 1, 2017**

This permit shall expire on: **June 30, 2019**

Issuance date: **June 27, 2017**

A handwritten signature in blue ink, appearing to read "Tisha Calabrese Benton".

for Tisha Calabrese Benton
Director

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1.0. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS OUTFALL 001

The Brownsville Energy Authority is authorized to discharge treated municipal wastewater to a common outfall designated Outfall 001 from the combined discharge flows of a dual trickling filter wastewater treatment system (designated discharge 01B) and a lagoon wastewater treatment system (designated discharge 01A) to the Hatchie River at river mile 76.3.

Discharge 01A consists of treated municipal wastewater from the lagoon treatment facility (also permitted under permit TN0075078) with a design capacity for this permit of 0.95 MGD and shall be limited and monitored by the permittee, prior to its mixing with discharges from the trickling filter system (01B), as specified below:

Internal Outfall (Discharge) 01A (Lagoon)
Monitoring: Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	<=	515	lb/d	Composite	Weekly	Daily Maximum
BOD, 5-day, 20 C	<=	357	lb/d	Composite	Weekly	Monthly Average
BOD, 5-day, 20 C	<=	50	mg/L	Composite	Weekly	Weekly Average
BOD, 5-day, 20 C	<=	396	lb/d	Composite	Weekly	Weekly Average
BOD, 5-day, 20 C	<=	65	mg/L	Composite	Weekly	Daily Maximum
BOD, 5-day, 20 C	<=	45	mg/L	Composite	Weekly	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Total Suspended Solids (TSS)	<=	792	lb/d	Composite	Weekly	Monthly Average
Total Suspended Solids (TSS)	<=	100	mg/L	Composite	Weekly	Monthly Average
Total Suspended Solids (TSS)	<=	110	mg/L	Composite	Weekly	Weekly Average
Total Suspended Solids (TSS)	<=	872	lb/d	Composite	Weekly	Weekly Average
Total Suspended Solids (TSS)	<=	951	lb/d	Composite	Weekly	Daily Maximum
Total Suspended Solids (TSS)	<=	120	mg/L	Composite	Weekly	Daily Maximum

Internal Outfall 01A (Discharge) (Lagoon)

**Monitoring: Raw Sewage Influent
Season: All Year**

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
BOD, 5-day, 20 C	Report	-	mg/L	Composite	Weekly	Monthly Average
BOD, 5-day, 20 C	Report	-	mg/L	Composite	Weekly	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Weekly	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Weekly	Monthly Average

**Internal Outfall 01A (Discharge) (Lagoon)
Monitoring: Wet Weather
Season: All Year**

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Overflow use, occurrences	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

**Internal Outfall 01A (Discharge) (Lagoon)
Monitoring: Dry Weather
Season: All Year**

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Overflow use, occurrences	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

**Internal Outfall 01A (Discharge) (Lagoon)
Monitoring: All Weather
Season: All Year**

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Bypass of Treatment	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

**Internal Outfall 01A (Discharge) (Lagoon)
Monitoring: Percent Removal
Season: All Year**

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
BOD, 5-day, % removal	>=	65	%	Calculated	Weekly	Monthly Average Minimum
TSS, % removal	>=	65	%	Calculated	Weekly	Monthly Average Minimum

Discharge 01B consists of treated municipal wastewater from the dual trickling filter treatment facility with a design capacity for this permit of 1.08 MGD and shall be limited and monitored by

the permittee, prior to its mixing with discharges from the lagoon system (01A), as specified below:

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: Effluent Gross
Season: All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	<=	270	lb/d	Composite	Three Per Week	Monthly Average
BOD, 5-day, 20 C	<=	360	lb/d	Composite	Three Per Week	Weekly Average
BOD, 5-day, 20 C	<=	40	mg/L	Composite	Three Per Week	Weekly Average
BOD, 5-day, 20 C	<=	45	mg/L	Composite	Three Per Week	Daily Maximum
BOD, 5-day, 20 C	<=	30	mg/L	Composite	Three Per Week	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Total Suspended Solids (TSS)	<=	360	lb/d	Composite	Three Per Week	Weekly Average
Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Three Per Week	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Three Per Week	Weekly Average
Total Suspended Solids (TSS)	<=	270	lb/d	Composite	Three Per Week	Monthly Average
Total Suspended Solids (TSS)	<=	45	mg/L	Composite	Three Per Week	Daily Maximum

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: Raw Sewage Influent
Season: All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	Report	-	mg/L	Composite	Three Per Week	Monthly Average
BOD, 5-day, 20 C	Report	-	mg/L	Composite	Three Per Week	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Three Per Week	Daily Maximum
Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Three Per Week	Monthly Average

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: Wet Weather
Season: All Year

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Overflow use, occurrences	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: Dry Weather
Season: All Year

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Overflow use, occurrences	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: All Weather
Season: All Year

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
Bypass of Treatment	Report	-	occur/mo	Occurrences	Continuous	Monthly Total

Internal Outfall (Discharge) 01B (Trickling Filter)
Monitoring: Percent Removal
Season: All Year

<u>Parameter</u>	<u>Qualifier</u>	<u>Value</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Statistical Base</u>
BOD, 5-day, % removal	>=	65	%	Calculated	Three Per Week	Monthly Average Minimum
BOD, 5-day, % removal	>=	35	%	Calculated	Three Per Week	Daily Minimum
TSS, % removal	>=	35	%	Calculated	Three Per Week	Daily Minimum
TSS, % removal	>=	65	%	Calculated	Three Per Week	Monthly Average Minimum

Discharge from Outfall 001 consists of the combined treated municipal wastewater discharges from the lagoon wastewater treatment facility (01A) and the dual trickling filter treatment facility (01B) with a combined design capacity for this permit of 2.03 MGD and shall be limited and monitored by the permittee as follows:

**External Outfall 001
Monitoring: Effluent Gross
Season: All Year**

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Chlorine, total residual (TRC)	<=	1.7	mg/L	Grab	Five Per Week	Instantaneous Maximum
E. coli	<=	126	#/100mL	Grab	Three Per Week	Monthly Geometric Mean
E. coli	<=	487	#/100mL	Grab	Three Per Week	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Continuous	Daily Maximum
Flow	Report	-	Mgal/d	Continuous	Continuous	Monthly Average
IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	1.0	%	Composite	Annual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales	>=	1.0	%	Composite	Annual	Minimum
Nitrogen, total (as N)	Report	-	lb/d	Composite	Quarterly	Daily Maximum
Nitrogen, total (as N)	Report	-	mg/L	Composite	Quarterly	Daily Maximum
Oxygen, dissolved (DO)	>=	1	mg/L	Grab	Five Per Week	Instantaneous Minimum
Phosphorus, total (as P)	Report	-	lb/d	Composite	Quarterly	Daily Maximum
Phosphorus, total (as P)	Report	-	mg/L	Composite	Quarterly	Daily Maximum
Settleable Solids	<=	1	mL/L	Grab	Five Per Week	Daily Maximum
pH	>=	6	SU	Grab	Five Per Week	Minimum
pH	<=	9	SU	Grab	Five Per Week	Maximum

**1.2. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS APPLICABLE TO ALL
OUTFALLS AND DISCHARGES**

General references for test methods may be found in permit Part 1.4.3. See Part 3.4 for biomonitoring test and reporting requirements. See next page for percent removal calculations.

Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less than the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the *E. coli* group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for *E. coli* within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters.

There shall be no distinctly visible floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

For BOD₅ or CBOD₅ and TSS, removal efficiency is calculated on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}} \right] \times 100\% = \% \text{ removal}$$

1.3. MONITORING PROCEDURES

1.3.1. Representative Sampling

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream. This can be a different point for different parameters, but must be after all treatment for that parameter or all expected change:

- a. The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.
- b. Samples for *E. coli* can be collected at any point between disinfection and the actual discharge.
- c. The dissolved oxygen can drop in the outfall line; therefore, D.O. measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.

- d. Total suspended solids and settleable solids can be collected at any point after the final clarifier.
- e. Biomonitoring tests (if required) shall be conducted on final effluent.

1.3.2. Sampling Frequency

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the "No Discharge" block on the Discharge Monitoring Report if there has been any discharge from that particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then the permittee must sample on that day and report the results of analyses accordingly.

1.3.3. Test Procedures

- a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.
- b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.
- c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6 degrees Celsius during the compositing period.
- d. In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).

1.3.4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling;
- b. The exact person(s) collecting samples;
- c. The dates and times the analyses were performed;
- d. The person(s) or laboratory who performed the analyses;
- e. The analytical techniques or methods used, and;

f. The results of all required analyses.

1.3.5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

1.4. REPORTING

1.4.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using NETDMR. Submittals shall be no later than 15 days after the completion of the reporting period. If NETDMR is not functioning, a completed DMR with an original signature shall be submitted to the following address:

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102**

If NETDMR is not functioning, a copy of the completed and signed DMR shall be mailed to the Jackson Environmental Field Office (EFO) at the following address:

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Jackson Environmental Field Office
1625 Hollywood Drive
Jackson, Tennessee 38305**

A copy should be retained for the permittee's files. In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit,

data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

1.4.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

1.4.3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

1.4.4. Monthly Report of Operation

Monthly operational reports shall be submitted on standard forms to the appropriate Division of Water Resources Environmental Field Office in Jackson, Nashville, Chattanooga, Columbia, Cookeville, Memphis, Johnson City, or Knoxville. Reports shall be submitted by the 15th day of the month following data collection.

1.4.5. Bypass and Overflow Reporting

1.5.5.1 Report Requirements

A summary report of known or suspected instances of overflows in the collection system or bypass of wastewater treatment facilities shall accompany the Discharge Monitoring Report. The report must contain the date and duration of the instances of overflow and/or bypassing and the estimated quantity of wastewater released and/or bypassed.

The report must also detail activities undertaken during the reporting period to (1) determine if overflow is occurring in the collection system, (2) correct those known or suspected overflow points and (3) prevent future or possible overflows and any resulting bypassing at the treatment facility.

On the DMR, the permittee must report the number of sanitary sewer overflows, dry-weather overflows and in-plant bypasses separately. Three lines must be used on the DMR form, one for sanitary sewer overflows, one for dry-weather overflows and one for in-plant bypasses.

1.5.5.2 Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the permittee must notify the division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

1.4.6. Reporting Less Than Detection

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report "BDL" or "NODI =B" on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit. The required detection levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Resources, Chapter 0400-40-03-.05(8).

For example, if the limit is 0.02 mg/l with a detection level of 0.05 mg/l and detection is shown; 0.05 mg/l must be reported. In contrast, if nothing is detected reporting "BDL" or "NODI =B" is acceptable.

1.5. COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.6. REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

- a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
- b. Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

2.0. GENERAL PERMIT REQUIREMENTS

2.1. GENERAL PROVISIONS

2.1.1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of the Division of Water Resources (the "director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.2. Right of Entry

The permittee shall allow the director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;
- b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and
- c. To sample at reasonable times any discharge of pollutants.

2.1.3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

2.1.4. Proper Operation and Maintenance

- a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

- b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and or other technology based effluent limitations such as those in State of Tennessee Rule 0400-40-05-.09.

2.1.5. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.8. Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the director, then the permittee shall promptly submit such facts or information.

2.2. CHANGES AFFECTING THE PERMIT

2.2.1. Planned Changes

The permittee shall give notice to the director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants, which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2.2.2. Permit Modification, Revocation, or Termination

- a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.
- b. The permittee shall furnish to the director, within a reasonable time, any information which the director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the director, upon request, copies of records required to be kept by this permit.
- c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.
- d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

- a. The permittee notifies the director of the proposed transfer at least 30 days in advance of the proposed transfer date;
- b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and
- c. The director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the

transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), "Signatories to permit applications"; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

2.2.4. Change of Mailing Address

The permittee shall promptly provide to the director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

2.3. NONCOMPLIANCE

2.3.1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2.3.2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response team).

A written submission must be provided within five days of the time the permittee becomes aware of the circumstances unless the director on a case-by-case basis waives this requirement. The permittee shall provide the director with the following information:

- i. A description of the discharge and cause of noncompliance;
- ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
- iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.3.2.a above, the permittee shall report the noncompliance on the Discharge Monitoring Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

2.3.3. **Overflow**

- a. **"Overflow"** means any release of sewage from any portion of the collection, transmission, or treatment system other than through permitted outfalls.
- b. Overflows are prohibited.
- c. The permittee shall operate the collection system so as to avoid overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic overflows (greater than 5 events per year) or would otherwise overload any portion of the system.
- d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the local TDEC Environmental Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.
- e. In the event that more than 5 overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources EFO staff to petition for a waiver based on mitigating evidence.

2.3.4. **Upset**

- a. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- i. An upset occurred and that the permittee can identify the cause(s) of the upset;
- ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;
- iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
- iv. The permittee complied with any remedial measures required under "Adverse Impact."

2.3.5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.6. Bypass

- a. "**Bypass**" is the intentional diversion of waste streams from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- b. Bypasses are prohibited unless all of the following 3 conditions are met:
 - i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There are no feasible alternatives to bypass, such as the construction and use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment downtime or preventative maintenance;
 - iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.

- c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 2.3.6.b.iii, above.

2.3.7. Washout

- a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.
- b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

2.4. LIABILITIES

2.4.1. Civil and Criminal Liability

Except as provided in permit conditions for "**Bypassing**," "**Overflow**," and "**Upset**," nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

3.0. PERMIT SPECIFIC REQUIREMENTS

3.1. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator and the collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the division, the permittee will undertake the following activity.

- a. The permittee has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with Section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part 69-3-123 through 69-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:
 - i. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;
 - ii. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;
 - iii. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;
 - iv. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three (3) years;
 - v. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;

- vi. Publish annually, pursuant to 40 CFR 403.8 (f)(2)(viii), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period.
 - vii. Maintain an adequate revenue structure for continued operation of the pretreatment program.
 - viii. Update its Industrial Waste Survey at least once every five years. Results of this update shall be submitted to the Division of Water Resources, Pretreatment Section within 120 days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date.
 - ix. Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.
- b. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific prohibitions. Under no circumstances shall the permittee allow introduction of the following wastes in the waste treatment system:

- i. Pollutants which create a fire or explosion hazard in the POTW;
- ii. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.
- iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system resulting in interference.
- iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the treatment works.
- v. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.
- vi. Any priority pollutant in amounts that will contaminate the treatment works sludge.

- vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
 - viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
 - ix. Any trucked or hauled pollutants except at discharge points designated by the POTW.
- c. The permittee shall notify the Tennessee Division of Water Resources of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:
- i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants.
 - ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants.
 - iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through guidelines, discharge by this source is prohibited until the Tennessee Division of Water Resources gives final authorization.

d. Reporting Requirements

The permittee shall provide a semiannual report briefly describing the permittee's pretreatment program activities over the previous six-month period. Reporting periods shall end on the last day of the months of March and September. The report shall be submitted to the Division of Water Resources, Central Office and a copy to the appropriate Environmental Field Office no later than the 28th day of the month following each reporting period. For control authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Each report shall conform to the format set forth in the State POTW Pretreatment Semiannual Report Package which contains information regarding:

- i. An updated listing of the permittee's industrial users.
- ii. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sampling procedures:

Pollutant	Sample Type
chromium, trivalent	24-hour composite
chromium, hexavalent	24-hour composite
total chromium	24-hour composite
copper	24-hour composite
lead	24-hour composite
nickel	24-hour composite
zinc	24-hour composite
cadmium	24-hour composite
mercury	24-hour composite
silver	24-hour composite
total phenols	grab
cyanide	grab

If any particular pollutant is analyzed more frequently than is required the permittee shall report the maximum and average values on the semiannual report. All upsets, interferences, and pass-through violations must also be reported on the semiannual report, the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

chromium III	cyanide	phthalates, sum of the following: bis (2-ethylhexyl) phthalate butyl benzylphthalate di-n-butylphthalate diethyl phthalate
chromium VI	silver	
copper	benzene	
lead	carbon tetrachloride	
nickel	chloroform	
zinc	ethylbenzene	1,2 trans-dichloroethylene
cadmium	methylene chloride	tetrachloroethylene
mercury	naphthalene	toluene
phenols, total	1,1,1 trichloroethane	trichloroethylene
chromium, total		

- iii. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once per reporting period.
- iv. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in 40 CFR 403.8(f)(2)(viii).

- v. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program.
- vi. Summary of permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once per year.

3.3. BIOSOLIDS MANAGEMENT PRACTICES

All sludge and/or biosolids use or disposal must comply with 40 CFR 503 et seq. Biosolids shall be sampled and analyzed at a frequency dependent on the amount used annually.

Any facility that land applies non-exceptional quality biosolids must obtain an appropriate permit from the division in accordance with Chapter 0400-40-15.

- a. Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.
- b. Notice of change in sludge disposal practice: The permittee shall give prior notice to the director of any change planned in the permittee's sludge disposal practice. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals (see table below):

Division of Solid Waste Management			
Office	Location	Zip Code	Phone No.
Jackson	1625 Hollywood Drive	38305	(731) 512-1300

3.4. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow (*Pimephales promelas*) Larval Survival and Growth Test on samples of final effluent from Outfall 001.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC₂₅) of the test organisms. The IC₂₅

shall be determined based on a 25% reduction as compared to the controls, and as derived from linear interpolation. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Existing Trickling Filter Configuration (Outfall 001)

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	2 X PL	Permit Limit (PL)	0.50 X PL	0.25 X PL	Control
% effluent					
4	2	1.0	0.5	0.25	0

The dilution/control water used will be moderately hard water as described in [Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms](#), EPA-821-R-02-013 (or the most current edition). A chronic standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report. Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC₂₅ is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent collected on days 1, 3 and 5. If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria in [Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms](#), EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in [Method Guidance and Recommendations for Whole Effluent Toxicity \(WET\) Testing](#), EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein for Outfall 001 shall be conducted yearly (1/yr) and begin no later than 90 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will**

not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months.** Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with [Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms](#), EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with [Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms](#), EPA-821-R-02-013, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address (see table below):

Division of Water Resources			
Office	Location	Zip Code	Phone No.
Jackson	1625 Hollywood Drive	38305	(731) 512-1300

3.5. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection

system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

Permitted CSO or unpermitted bypass/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
Brownsville Energy Authority WWTP
(731) 772-8845
NPDES Permit NO. TN0062367
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Jackson

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
Brownsville Energy Authority WWTP
(731) 772-8845
NPDES Permit NO. TN0062367
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Jackson

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

3.6. ANTIDegradation

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled "Tennessee Antidegradation Statement," which prohibits the degradation of high quality surface waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

4.0. DEFINITIONS AND ACRONYMS

4.1. DEFINITIONS

"Biosolids" are treated sewage sludge that have contaminant concentrations less than or equal to the contaminant concentrations listed in Table 1 of subparagraph (3)(b) of Rule 0400-40-15-.02, meet any one of the ten vector attraction reduction options listed in part (4)(b)1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 of Rule 0400-40-15-.04, and meet either one of the six pathogen reduction alternatives for Class A listed in part (3)(a)3, 4, 5, 6, 7, or 8, or one of the three pathogen reduction alternatives for Class B listed in part (3)(b)2, 3, or 4 of Rule 0400- 40-15-.04.

A **"bypass"** is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A **"calendar day"** is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

A **"composite sample"** is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

The **"daily maximum concentration"** is a limitation on the average concentration in units of mass per volume (e.g. milligrams per liter), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

"Discharge" or "discharge of a pollutant" refers to the addition of pollutants to waters from a source.

A **"dry weather overflow"** is a type of sanitary sewer overflow and is defined as one day or any portion of a day in which unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharges from more than one point within a 24-hour period shall be counted as separate overflows.

"Degradation" means the alteration of the properties of waters by the addition of pollutants or removal of habitat.

"De Minimis" - Alterations, other than those resulting in the condition of pollution or new domestic wastewater discharges, that represent either a small magnitude or a short duration shall be considered a de minimis impact and will not be considered degradation for purposes of implementing the antidegradation policy. Discharges

other than domestic wastewater will be considered de minimis if they are temporary or use less than five percent of the available assimilative capacity for the substance being discharged. Water withdrawals will be considered de minimis if less than five percent of the 7Q10 flow of the stream is removed (the calculations of the low flow shall take into account existing withdrawals). Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the division finds that the impacts are offset by a combination of impact minimization and/or insystem mitigation.

If more than one activity has been authorized in a segment and the total of the impacts uses no more than ten percent of the assimilative capacity, available habitat, or 7Q10 low flow, they are presumed to be de minimis. Where total impacts use more than ten percent of the assimilative capacity, available habitat, or 7Q10 low flow they may be treated as de minimis provided that the division finds on a scientific basis that the additional degradation has an insignificant effect on the resource and that no single activity is allowed to consume more than five percent of the assimilative capacity, available habitat or 7Q10 low flow.

An "**ecoregion**" is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The "**geometric mean**" of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A "**grab sample**" is a single influent or effluent sample collected at a particular time.

The "**instantaneous maximum concentration**" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**instantaneous minimum concentration**" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "**monthly average amount**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The "**monthly average concentration**", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

A "**one week period**" (or "**calendar-week**") is defined as the period from Sunday through Saturday. For reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

"Pollutant" means sewage, industrial wastes, or other wastes.

A **"quarter"** is defined as any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

A **"rainfall event"** is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A **"rationale"** (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A **"reference site"** means least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A **"reference condition"** is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

A **"sanitary sewer overflow (SSO)"** is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall.

"Sewage" means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present.

"Severe property damage" when used to consider the allowance of a bypass or SSO means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass or SSO. Severe property damage does not mean economic loss caused by delays in production.

"Sewerage system" means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

"Sludge" or **"sewage sludge"** is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

A “**subecoregion**” is a smaller, more homogenous area that has been delineated within an ecoregion.

“**Upset**” means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

The term, “**washout**” is applicable to activated sludge plants and is defined as loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

“**Waters**” means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

The “**weekly average amount**”, shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The “**weekly average concentration**”, is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

4.2. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval

30Q5 – 30-day minimum, 5-year recurrence interval

7Q10 – 7-day minimum, 10-year recurrence interval

BAT – best available technology economically achievable

BCT – best conventional pollutant control technology

BDL – below detection level

BOD₅ – five day biochemical oxygen demand

BPT – best practicable control technology currently available

CBOD₅ – five day carbonaceous biochemical oxygen demand

CEI – compliance evaluation inspection

CFR – code of federal regulations

CFS – cubic feet per second

CFU – colony forming units

CIU – categorical industrial user

CSO – combined sewer overflow

DMR – discharge monitoring report

D.O. – dissolved oxygen

E. coli – *Escherichia coli*

EFO – environmental field office

LB(lb) - pound

IC₂₅ – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms

IU – industrial user

IWS – industrial waste survey

LC₅₀ – acute test causing 50% lethality

MDL – method detection level

MGD – million gallons per day

MG/L(mg/l) – milligrams per liter

ML – minimum level of quantification

ml – milliliter

MLSS – mixed liquor suspended solids

MOR – monthly operating report

NODI – no discharge

NOEC – no observed effect concentration

NPDES – national pollutant discharge elimination system

PL – permit limit

POTW – publicly owned treatment works

RDL – required detection limit

SAR – semi-annual [pretreatment program] report

SIU – significant industrial user

SSO – sanitary sewer overflow

STP – sewage treatment plant

TCA – Tennessee code annotated

TDEC – Tennessee Department of Environment and Conservation

TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation

TMDL – total maximum daily load

TRC – total residual chlorine

TSS – total suspended solids

WQBEL – water quality based effluent limit

ADDENDUM TO RATIONALE

Brownsville Energy Authority WWTP
NPDES Permit No. TN0062367
Date: June 22, 2017
Permit Writer: Paul Higgins

Since discharges from the Megasite to the BEA South Plant for ultimate discharge to the Hatchie River are no longer under consideration, this permit has been modified by removing all permit requirements and references pertaining to the Megasite and the Sequencing Batch Reactor configuration. This final permit now contains only requirements similar to those in the previous permit for the trickling filter. The only language change not related to the Megasite was the inclusion of the new NetDMR reporting language. The new permit is set to expire on the Hatchie River Monitoring schedule, 2019.

Since the Rationale and, in this case, the Introduction to the Rationale provide a history of the development of permit requirements from draft to final permit, these documents have not been changed. The division did receive some comments that were directed toward the existing trickling filter facility and those are addressed in the Introduction to the Rationale.

INTRODUCTION TO RATIONALE

Brownsville Energy Authority WWTP
NPDES Permit No. TN0062367
Date: May 4, 2015
Permit Writer: Paul Higgins

The division has received numerous comment letters and emails from the public, as well as from the permittee and various environmental organizations concerning the first and second draft permits. Additional comments were heard at the public hearing held in June of 2014. The concerns in these comments were primarily over the effects of the discharge of the proposed Sequencing Batch Reactor (SBR) on the Hatchie River. In consideration of all of these comments and also comments from EPA Region 4, the division delayed the issuance of both Brownsville Energy Authority's (BEA's) North Plant Lagoon (TN0075078) and South Plant Trickling Filter (TN0062367) permits pending clarification of several factors, the most important of which was the status of the state General Water Quality Criteria rule, Chapter 0400-40-03. The division has decided to place the South Plant permit, TN0062367, on public notice for a third time for two reasons. First of all, the questions and comments concerning this draft permit were so extensive, we felt that it was necessary to address them in some detail and provide the public with the opportunity to respond. Additionally, the 'de minimis' metals limits were recalculated using the most recent data available. Even though the changes in the limits were minimal (most slightly higher, some slightly lower), providing the opportunity to comment is important. Additional limits addressing acute toxicity in near-field effects have also been added to the permit to provide additional protection for the Hatchie River. The details of the calculations are contained below and in the updated *Rationale*.

Comments and the division's responses are included below. Comments have been paraphrased for brevity and clarity. Similar comments have been combined when a single response was called for. The comments are addressed in approximate chronological order. The division's responses are in *italic font*.

1. There has been no NEPA environmental impact study or environmental impact study of any kind conducted concerning the additional discharge permitted by this permit.

NEPA environmental impact studies are only required for federal actions. Tennessee Department of Environment and Conservation NPDES permitting actions do not require NEPA review. However, the division continually assesses the status of all waters of the state. Watersheds are assessed on a 5-year cycle. The assessment determines whether or not the stream is able to support all of the needs of all of the streams designated uses. For this segment of the Hatchie those are identified in state rule Chapter 0400-40-04 and are named, Domestic Water Supply, Industrial Water Supply, Fish and Aquatic Life, Recreation, Irrigation, Livestock Watering and Wildlife. The last assessment of the applicable segment of the Hatchie River was conducted April 23, 2012. The assessment determined that the segment was fully supportive of all designated uses. The assessment protocol consists of an extensive array of monitoring including prescribed chemical and physical properties as well as biological integrity assessments conducted by well trained professionals.

2. Brownsville Energy Authority did not provide all the permit application information requested in state rule 0400-40-03-.06 including all social and economic alternative information.

BEA submitted appropriate, completed application forms on October 23, 2013, and additional information requested by the division by means of letter and other communications. The Hatchie River is considered to be Exceptional Tennessee Waters, and, according to rule 0400-40-03-.06(4)(c)1,

“In waters identified as Exceptional Tennessee Waters new or increased discharges that would cause degradation of any available parameter above the level of de minimis and discharges of domestic wastewater will only be authorized if the applicant has demonstrated to the Department that reasonable alternatives to degradation are not feasible and the degradation is necessary to accommodate important economic or social development in the area and will not violate the water quality criteria for uses existing in the receiving waters. At the time of permit renewal, previously authorized discharges, including upstream discharges, which presently degrade Exceptional Tennessee Waters above a de minimis level, will be subject to a review of updated alternatives analysis information provided by the applicant, but not to a determination of economic/social necessity. Public participation for these existing discharges will be provided in conjunction with permitting activities. Sources exempted from permit requirements under the Water Quality Control Act should utilize all cost effective and reasonable best management practices.”

BEA South Plant is an existing discharger to the Hatchie and, according to the citation above, provided the division with a letter outlining the alternatives that they had considered to their existing discharge. Since the ‘new or increased discharge’ consists of the de minimis metals from the Megasite source and there is no increase in the domestic wastewater portion of the discharge, justification for the new discharge is not required.

3. The facility has experienced excessive inflow and infiltration as well as numerous permit violations and was included on the EPA Quarterly Non-compliance Report The City of Brownsville was also under Director’s Order WPC10-0046 for various violations. This permit should be denied.

BEA met all requirements of the order and the order was closed in September 2013. A review of the Discharge Monitoring Report data indicates overall permit compliance since 2011. The South Plant was on the EPA Quarterly Non-compliance Report in 2013 for a late DMR report. BEA is maintaining and operating the facility in a responsible manner.

4. This permit is short-sighted regarding the damaging effects of a five-fold increase in discharge volume, an unknown increase in pollutants from an unknown industry, damage to plant and animal life, and the long-term clean-up expenses associated with the new discharge.

The Division of Water Resources exists to protect the waters of the state in service to all citizens of the state. The laws and rules that we operate under make it unlawful for us to

issue a permit that is not fully protective of the receiving waters. The division contends that all the requirements in this permit are fully protective of the fish and aquatic life stream use, as well as all other designated uses. As far as the proposed effluent flow, the increase in permitted flow would be from approximately 2 Million Gallons per Day (MGD) to 4 MGD. The current average flow is approximately 0.7 MGD. Using the 'worst case' increase of 3.3 MGD, the increase only represents about 1.8% of the Hatchie's critical low flow (7Q10) of 182 MGD. That increase in flow is not significant and considerably less than de minimis.

It is true that there is currently not a tenant for the Megasite property. But, as explained in the permit RATIONALE, the proposed Megasite/SBR portion of the permit was written for one specific industry for the purpose of establishing a framework for basic site infrastructure and enhancing the marketability of the site. The Tennessee Department of Economic and Community Development has chosen the automotive industry as its primary target for the site. To arrive at appropriate limits, the division used EPA's publication Profile of the: Motor Vehicle Assembly Industry (EPA/310-R-95-009). In this publication, EPA gathered production, operational and environmental data from the automotive industry nationwide to provide an extensive and definitive description of the pollutants of concern for such a site. The division primarily used this publication to define the pollutants of concern for the proposed SBR section of the permit. This process is no different than the division's common practice of developing a permit based on a company's design information for a new facility. If anything, it is more restrictive because the process of identifying pollutants of concern involved many different companies and different processes with potentially different pollutants. As an additional safeguard, the division expressed its intention to reopen the permit (in the REOPENER CLAUSE) in the event that any of the basic assumptions used in preparing the permit proved inaccurate in any way. This language was strengthened in the latest version of the permit by using language suggested by Tennessee Clean Water Network.

Addressing the long term costs generated by the treatment processes, that topic is not directly related to the NPDES permit. However, they should be no more than the costs normally related to a similar industry and are commonly passed on to the industry.

5. What efforts were made to notify stakeholders (property owners, wildlife agencies, citizens, etc.) of this additional and potentially harmful discharge to the Hatchie River? It appears that the public notice process is entirely inadequate and does not inform the public of what industry or effluent is coming.

The division strives to operate in an open and transparent manner. Our public notice and participation (including the public hearing as was held for BEA permits TN0075078 and TN0062367) are prescribed by state rule 0400-40-05-.06. The multiple forms of notification are used including publication of a notice in a local newspaper and posting on a dedicated website for stakeholders commonly interested in permitting activities such as wildlife agencies and environmental groups. The notice includes the name of the permittee, the type of discharge and instructions about obtaining additional information.

6. Were alternatives to the BEA South Plant considered for this discharge of industrial wastewater?

Alternatives including discharge to other Publicly Owned Wastewater Treatment Plants (POTW) and direct discharge to other area streams were considered. All were rejected for various reasons including being too small to handle the flow or too costly because of increased energy usage and operational costs due to the distance from the project site.

7. How will the new industrial discharge affect the water quality of the Hatchie River and the various wetlands and oxbows associated with the river and the Hatchie Federal Wildlife Refuge? There are many rare species of aquatic life that live in the Hatchie River including some that are endangered and many mussels and other species that occur only in the Hatchie.

The state's Water Quality Criteria (WQC), found in the Tennessee Rule, Chapter 0400-40-03, establish protection of all designated surface waters uses through implementation of numeric and narrative criteria. The criteria for the designated use named "Fish and Aquatic Life," is protective of all species, including those deemed threatened and endangered (state or federal). Our criteria were derived from the federal water quality criteria. By regulation, the state's WQC must be at least as protective as the federal criteria. With the respect to the derivation of numeric water quality criteria, EPA's WQC are established by reviewing available acute and chronic toxicity data from public and private laboratories and applying an appropriately conservative value for both acute and chronic toxicity. Permit writers apply the instream WQC to the pollutants of concern in a permittee's discharge and, by accounting for the flow of the discharge and the receiving stream and any other applicable local factors, calculate a protective effluent limitation. For the first two draft permits, the appropriate acute and chronic WQC were determined, the most restrictive limit value was chosen as the applicable WQC. At that point, the criteria chosen would have been protective of all of the Hatchie's uses including Fish and Aquatic Life and Human Health related uses. However, because the Hatchie is an Exceptional Tennessee Waters and a Scenic River, the division chose to use a de minimis limit, or 5% of that instream water quality criteria (the assimilative capacity), to calculate the facility's limits. Therefore, the de minimis limits are overly protective by a factor of 20 times.

There were similar comments, suggestions and questions of concern from many individuals, organizations and agencies expressing concern over the importance of the Hatchie's biota and the effects of adding any new pollutants to Exceptional Tennessee Waters. The Tennessee Clean Water Network, the Sierra Club, the Nature Conservancy, the Sentinels on the Hatchie, the United States Fish and Wildlife Service, the Tennessee Wildlife Resources Agency, and other organizations all commented that special consideration be given to the Hatchie. After considering all aspects of this particular permit, the division has decided that a change in the permit monitoring and limitation scheme was justified. Two de minimis-based metals limits will be used in the monitoring scheme of the current proposed draft permit to further limit the increased discharge of metals from the proposed Megasite. A long term, monthly average toxicity load limit, based on the Criterion Continuous Concentration WQC; and a short term, daily maximum concentration limit, based on the Criterion Maximum Concentration, will be added to the draft permit. In this manner, concerns of both long term exposures over wide areas and short term localized exposures are protected against toxicity. Both are de minimis limits and will insure protection under all circumstances.

There are many waterbodies within the Hatchie Federal Wildlife Refuge that are not fed directly by the Hatchie River. During normal river water flow, there would be no effect whatsoever from these discharges. However, we are aware that the Hatchie River System does flood at times, and that floodwaters can be transferred from the Hatchie upstream into tributaries and wetlands that are not normally fed by the Hatchie. In this case, the natural floodwater flow would be considerably higher, effectively decreasing the already low (de minimis) concentration of pollutants in BEA's discharge to the point that the 'de minimis' concentration would likely become not detectable.

8. How would this discharge affect the water purity within the area water table?

As indicated in previous responses, the limits in the permit will not violate any WQC and any water from the Hatchie that finds its way into the local water table will meet all uses, Fish and Aquatic Life, Recreation, Irrigation, Industrial Water Supply, Domestic Water Supply, and Livestock Watering and Wildlife.

9. How will our surface water, ground water and drinking water supply be monitored and how can the public be made aware of the information?

As mentioned above, the division assesses watersheds on a rotating 5-year schedule. Results of the assessments are summarized in a biennial 305(b) ([2012 305\(b\) Report: The Status of Water Quality in Tennessee](#)) Report. All wastewater treatment facilities are required to closely monitor pollutants of concern and report on monthly Discharge Monitoring Reports. These data are summarized in the RATIONALE section of each draft permit which may be accessed on the Data Viewer. Of course, all information concerning the quality of Tennessee's waters and the permitted discharges to those waters is available upon request.

10. Has the US Environmental Protection Agency been informed of this increased discharge?

The EPA reviews all major NPDES permits such as this one, and their comments are addressed later in this INTRODUCTION. EPA has been kept informed concerning this entire permitting process.

11. Why was this proposal included in BEA's application for permit reissuance rather than as a stand-alone application for a new discharge?

NPDES permit numbers like TN0062367 are attached to a specific facility and outfall location. It is common practice for permittees to include plans for major plant expansion projects in an application for reissuance. Recent examples are the Jefferson City STP (TN0021199), Spring Hill STP (TN0075868), Waynesboro STP (TN0021695), Niles Ferry WWTF (TN0058238), and TRDA STP (TN0059897). Since BEA's discharge pipe remains the same, the permit number remains the same and the permit requirements are altered to fit the expansion. The changes must still meet all applicable water quality criteria.

12. According to T.C.A. 11-13-116 (Scenic Rivers), the Tennessee Department of Environment and Conservation (TDEC) is charged with working with appropriate state and federal agencies "for the purpose of eliminating or diminishing pollution of waters within scenic rivers areas; provided that such cooperation furthers the objectives of preserving natural

stream flow and natural ecological conditions.” This draft permit violates the Scenic Rivers Act by allowing new heavy metals pollution in the Hatchie.

According to the Tennessee Water Quality Control Act, 69-3-101 et seq, the term ‘pollution’ is defined as,

(28) "Pollution" means such alteration of the physical, chemical, biological, bacteriological, or radiological properties of the waters of this state, including, but not limited to, changes in temperature, taste, color, turbidity, or odor of the waters that will:

(A) Result or will likely result in harm, potential harm or detriment to the public health, safety, or welfare;

(B) Result or will likely result in harm, potential harm or detriment to the health of animals, birds, fish, or aquatic life;

(C) Render or will likely render the waters substantially less useful for domestic, municipal, industrial, agricultural, recreational, or other reasonable uses; or

(D) Leave or likely leave the waters in such condition as to violate any standards of water quality established by the board;

The segment of the Hatchie River that receives BEA’s discharge is assessed as fully supportive of all intended uses as listed above. In other words, it is not polluted or is ‘available conditions’ for all pollutant parameters in BEA’s permit. Additionally, it is the division’s contention that all permit requirements in this draft permit, including the de minimis metals limits, are fully protective and will not result in a condition of ‘pollution.’ In reality, any water quality-based limits based on the current instream conditions, pollutant discharge rates and assimilative capacity would meet the meaning of the term ‘not causing pollution.’ However, the division decided to apply the very restrictive de minimis-based limits to this permit so that the extra level of protection to the receiving stream would be assured.

13. Neither BEA nor TDEC has conducted a measure of the diverse and sometimes rare biota found in the Hatchie River. T.C.A. 0400-40-.03(3)(m) states “Biological Integrity – The waters shall not be modified through the addition of pollutants...to the extent that the diversity and or productivity of aquatic biota within the receiving waters are substantially decreased....The parameters associate with this criterion are the aquatic biota measured. These are response variables....Effects to biological populations will be measured by comparisons to upstream conditions....” Comprehensive studies and monitoring of the Hatchie’s Biota should be conducted before any permit is issued and continued during the permit term.

The division continually conducts assessments of the waters of Tennessee. The assessment schedule is based on a five year rotation of groups of watersheds that is supplemented based on a specific need. As indicated 0400-40-03-.03(3)(m), chemical assessments are carried out according to the division’s ‘Quality Systems Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water’ and biological assessments are carried out according to the division’s ‘Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys.’ The ‘Assessment Database’ indicates that the Hatchie River is fully supportive of all stream

uses, including fish and aquatic life, and was last assessed on April 23, 2012. The Division of Water Resources is chartered to conduct surveys of the condition of waters of the state and assuring that the waters are protective of all species. However, the division is not charged with the responsibility of identifying or maintaining specific species. That task falls upon state and federal wildlife services.

14. The Hatchie River is a unique, diverse biotope with many rare species, like the Hatchie Burrowing Crayfish, that occur only in this watershed. The permit does not contain sufficiently restrictive monitoring (IC25) to assure that the discharges are not causing 'toxics in toxic amounts.' The test even allows a "kill rate" of 25%. Additionally, testing parameters should be more restrictive because of the possibility of localized or near field toxicity issues due to the presence of sensitive species.

The division agrees that the Hatchie is a unique treasure and that all life that relies on it must be protected. The water quality rules contain language that states that, in general, discharges shall not contain toxic pollutants in toxic amounts. Numeric water quality criteria for known toxic pollutants are established at levels which have been scientifically proven to be nontoxic by reviewing all available toxicity studies for a wide range of species, including those with heightened sensitivity to toxic pollutants. Both short term (acute) and long term (chronic) toxicity criteria are established for pollutants that display toxicity in a long or short time frame. Permit limits are based upon those water quality criteria, and in the case of this permit, limits are based on 5% (de minimis) of that water quality criteria. The de minimis limits will be protective of the most sensitive creatures and offer a very high degree of assurance that there will be no detrimental effect on the Hatchie from the proposed metal contaminants being added by the proposed Megasite discharge to the POTW.

However, to be certain that there is not some toxic effect from a combination of pollutants or some unknown toxic pollutant, the division requires Whole Effluent Toxicity (WET) testing. The division follows the guidelines established in two publications; 'Technical Support Document For Water Quality-based Toxics Control,' EPA/502/2-90-001, and – ['Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms.'](#) There are two established methods for WET monitoring, the Inhibition Concentration 25 (IC25) for measuring long term effects and the less restrictive Lethal Concentration 50 (LC50) for short term effects. For effluent and stream flow conditions such as those found in this permit, the IC25 is the appropriate method for WET monitoring. The IC25 is based on the observation of two surrogate species (Ceriodaphnia Dubia and Pimephales Promelas) in effluent diluted with pure water. The toxicity is conducted at a dilution equal to the actual effluent dilution level in the receiving stream and at selected dilution levels above and below the actual value. The permit limit is the actual dilution ratio, but the other serial dilutions, particularly the higher dilutions, provide very meaningful data. Commenters were concerned that the test uses the value of 25% as the effective endpoint of the test. The IC25 determines the effluent concentration that would cause a 25% reduction in a specific criterion or set of criterion that is specified for each species being tested. For instance, a 25% reduction in the mean number of young produced by a female or a 25% reduction in growth would both qualify for some species. Of course, survival is one of the reactions expected of a toxicant, but species also die naturally. The 25% end point was developed over years of testing with other more time consuming and costly methods of determining toxicity. The method has been rigorously tested and verified by EPA and remains the most frequently used method to determine toxicity in complex

mixtures of chemicals in effluents from systems such as Publicly Owned Treatment Works that receive wastes from many sources.

The outfall for this facility is located approximately 20 feet from the bank and drawings show it to be about 2 feet from the bottom. It is located immediately upstream from the confluence of Sugar Creek in the main channel of the Hatchie. This positioning is very favorable for good mixing, which, in turn, minimizes localized toxicity like bottom or bank hugging plumes. Additionally, the Wet testing results from BEA's South Plant have consistently indicated toxicity of 4% or higher, the highest dilution effluent concentration called for in the permit. The permit limit is 1%. If the proposed permit conditions ever come to fruition, the test will be run 8.8, 4.4, 2.2, 1.1 and 0.55% effluent, a significantly higher effluent concentration because of the higher flows and the arithmetic progression nature of the dilutions. Using the IC25 and the current protocol should be an efficiently effective means of monitoring overall toxicity.

15. The Tennessee Wildlife Resources Agency requested that BEA should be required to conduct surveys of the river and wet lands in the project corridor because of the possible existence of the federally listed endangered *Plethobasus cyphus*, Sheepnose mussel, and other unique species in the Hatchie.

NPDES permits must present a rationale for including a permit requirement. The rationale must include the reasons for the requirement and the result to be obtained by including the requirement. In other words, there must be an expected outcome from including a permit requirement. For most requirements, this is simply to verify compliance with water quality criteria or to verify proper facility operation. This request does not present any reason for conducting the surveys other than to determine the presence or absence of rare species. The purpose of NPDES permits is to protect water quality, not survey rare wildlife species. As discussed above, the de minimis metals limits and WET testing provide a framework for determining the non-toxic nature of the proposed discharge. If there are water quality related outcomes that would result from the surveys, the division would be willing to reconsider including the requirements in the permit.

16. Endangered species collection records indicate that *Plethobasus cyphus*, the Sheepnose mussel, may exist in the Hatchie. Additionally, the Hatchie supports a diverse and unique invertebrate and fish fauna found only in this relatively undisturbed riverine habitat. The draft permit failed to take these facts into account. Additionally, under the Endangered Species Act, this permit may not result in the 'take' of any endangered species.

The division recognizes the unique and valuable nature of the Hatchie River. However, expanding on the answer presented in Comment 14 above, the limits presented in this permit are based on Water Quality Criteria that were derived from extensive toxicity research for both the acute and chronic circumstances for all fish and aquatic life. The most stringent criteria were chosen to calculate limits in this permit to protect both chronic and acute toxicity issues. In addition to using protective limits, a de minimis of 5% was calculated for the permit limit. This yields an overwhelming confidence or safety factor (20-fold) in the fact that the limits are protective of all fish and aquatic life. Furthermore, none of the comments concerning endangered or unique species mentioned any specific species requirements or toxicity issues. In the event that specific species can be identified in the vicinity of the outfall and specific issues concerning the

discharge be defined, the division would entertain including permit requirements to address them.

17. The draft permit did not define the location of the new Outfall 002 in the proposed SBR section of the permit. Additionally the draft permit failed to take existing nutrient and metals loadings to tributaries in the Hatchie Watershed into consideration. These issues and their effects upon the unique Hatchie fauna should be taken into account. Additionally, since discharges from this plant may be sent to the North Plant Outfall (South Fork Forked Deer), this permit should contain total phosphorus limits, also.

In the original draft permit, Outfall 002 identified the outfall for the treated wastewater from the proposed Sequencing Batch Reactor facility (SBR). However, it never represented a new physical outfall. The location of the outfall as well as the outfall pipe itself for the proposed SBR is identical to the one currently in use for the trickling filter discharge. It was given a different number simply to differentiate the new outfall for administrative reasons. However, to eliminate confusion, the outfall for both the current plant configuration and the proposed SBR are now both designated as Outfall 001.

As indicated earlier, the Hatchie was assessed as fully supportive for all uses as of April 23, 2012. In addition, the division's chemical stream monitoring data for metals and nutrients at locations near the outfall were also reviewed while preparing the draft permit. The review did not indicate any evidence of water quality issues. Addressing the occasional discharge from the SBR to the North Plant outfall, nutrient impairments and the reduction of nutrient pollutants are considered to be chronic, long-term issues. As discussed in permit TN0075078, the discharge from the SBR only occurs in emergency situations and constitutes a small fraction of the overall discharge. The contribution of phosphorus from such a discharge cannot be considered a chronic discharge in any way. It would not be appropriate to include a phosphorus reduction program and limit in this permit on that basis.

18. If we allow a small amount of pollution now, it only opens doors to additional pollution. We must preserve environmental treasures like the Hatchie.

TDEC and the Division of Water Resources are dedicated to conserving all of our natural resources now and in the future. According to the division's Antidegradation Statement found in the General Water Quality Criteria rule (0400-40-03-.06) 'It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.' All requirements established in this permit, particularly the de minimis limits, are fully compliant with both the letter and the spirit of this statement. This permit proposes no increase in degradation. Furthermore, the language in the Antidegradation Statement protects the future integrity of all Exceptional Tennessee Waters by placing a 10% 'cap' on any new or increased de minimis discharges.

19. The de minimis argument used to calculate the new metals limits in the proposed SBR discharge section of the permit is not a viable concept. The General Water Quality Criteria rule, 0400-40-03, has not been approved by EPA; and EPA disapproved a similar State of Idaho rule because the rule did not include consideration of bioaccumulative pollutants. This proposed draft permit includes the bioaccumulative pollutants: cadmium, chromium III, chromium IV, copper, lead, nickel, and zinc. Bioaccumulative pollutants are harmful because they build up in the tissue of organisms living in the stream and can cause harm to

the organisms and to humans or other wildlife that might eat the organisms. Lead, for example, is highly bioaccumulative.

EPA developed a program to identify and reduce the risks and exposures to harmful bioaccumulative chemicals. The program is called Persistent Bioaccumulative and Toxic (PBT) Chemical Program (<http://www.epa.gov/pbt/>). Only one form of lead is included, alkyl-lead, which is not a pollutant of concern in this permit. None of the pollutants of concern in this permit are identified as a bioaccumulative pollutant according to EPA. Even though some metals, such as nickel and zinc do have a tendency to accumulate to some extent in fish tissues, that accumulation rate is taken into consideration in establishing the Human Health Water Quality Criteria. Therefore, bioaccumulation has been taken into account in setting permit limits.

Additionally, EPA approved the General Water Quality Criteria, 0400-40-03, on January 15, 2015. The division clarified that special consideration would be given to any pollutant identified as bioaccumulative. The priority bioaccumulative pollutants have been identified in the rule with the designation '(b)'.

20. The de minimis metals limits are expressed as concentration limits and should be expressed as load limits. If they remain only concentration limits, it would be possible for the permittee to discharge metals above the de minimis level in the event that the flow was higher than the design flow of 4 MGD. Additionally, BEA's consultant commented that the application of concentration limits only would severely restrict the limits that BEA could place on industrial users since BEA would have to base local limits on a worst case low flow from the facility.

Since the limits were calculated from the receiving streams assimilative loading capacity to begin with, the division agrees with the concept of including loading limits in the permit. As discussed in item 7 above, load limits will be applied as monthly averages and concentration limits will be applied as daily maximums. Additionally, to prevent overly high concentrations of metals from being transferred to the North Plant outfall in a crisis situation, a new set of Internal Monitoring Point limits will be added to the permit to restrict these discharges. The new limits are discussed thoroughly in the following RATIONALE.

21. Since the discharge includes pollutants of concern from a hypothetical source, special provisions should be made in the permit. For instance the permit should state something to the affect that "The discharge shall not cause or contribute to the violation of any water quality criteria."

The permit already contains a general statement that is a paraphrase of the suggested language. It states in sub-part 1.3: "The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream." As an additional assurance against 'unknown discharges,' the division also included a requirement to perform a scan of all EPA priority pollutants on the discharge within two years after the new proposed discharge commences.

22. The de minimis limits do not take into account the varying water levels that the Hatchie experiences. Consequently, the concentration in the river will be too high during at low water times. The limits also do not take into account the fact that the Hatchie is not channelized

and the role that condition plays on flow and sediment and the overall effect on limit calculations.

The calculation of all instream water quality-based limits uses the statistical 7Q10 critical low flow for fish and aquatic life permits and the 30Q5 low flow for human health criteria. By way of explanation, the 7Q10 is the lowest flow sustained over a seven day period within a ten year observation time-frame. The division and EPA recognize these statistical critical low flow values to be used in the calculation of protective permit limits. The calculations also take the amount of background total suspended solids when calculating limits to eliminate falsely high limits. The fact that the Hatchie is not channelized actually helps to increase turbulence in the stream and promote mixing. (See also item 41.)

23. Sections 6.6 and 6.7 of the RATIONALE state that calculations for metals from the industrial discharger “are applicable only to dischargers from the current configuration” which is the existing trickling filter. That means the SBR, that doesn’t exist, also has no calculations. Additionally, the proposed ‘new source’ of industrial metals containing wastewater cannot meet the definition of new source as found in state rule 0400-40-05-.02 (55): “*The term “new source” means any building, structure, facility, area or installation from which there is or may be a “discharge of pollutants,” the construction of which commenced after the publication of state or federal regulations prescribing a standard of performance.*” Therefore the permit cannot be issued.

The division does not understand this comment since the comment seems to deal with trickling filter and the SBR or the existing plant configuration and the proposed configuration. The RATIONALE sections 6.6 and 6.7 deal with biomonitoring and the calculation of pretreatment pass through limits, and the comment is discussing the definition of ‘new source.’ The division agrees that the proposed SBR does not meet the definition of ‘new source,’ but because it is simply a replacement for an outdated portion of an existing process with an existing permitted outfall. The division’s opinions concerning the increased discharge from the proposed Megasite to BEAs South Plant has been discussed thoroughly above in item 12.

24. There is currently no monitoring for metals in the permit for the existing trickling filter. This violates state law and regulations by allowing a possible discharge of Pass Through metals and toxics without regular monitoring.

Metals monitoring for the existing configuration is accomplished through the Pretreatment Program. You can find a brief summary of those requirements in section 3.2 of the permit.

25. This facility is already in violation of its existing permit and discharging illegally to the Forked Deer in violation of the Clean Water Act.

BEA is not currently in violation of its TN0062367 NPDES permit and a review of the last two to three years of monitoring data indicates overall compliance. This facility only discharges to the Hatchie River and is not currently permitted to discharge to the South Fork Forked Deer or the Forked Deer or any other waterbody.

26. The hope of a tenant for the Megasite at a future date does not satisfy the definition of 'construction' as found in 0400-40-05-.02(23). "Construction" means any placement, assembly, or installation of facilities or equipment (including contractual obligations to purchase such facilities or equipment) at the premises where such equipment will be used, including preparation work at such premises."

This permit does not authorize any activity at the Megasite. It only establishes a framework for the discharge of treated municipal wastewater from the site.

27. The permit violates the state rules due to the absence of the type of quantitative and qualitative certified representations of production volumes required by the rule 0400-04-05-.08(1)(o).

This section of the rule is referring to facilities with Effluent Limitation Guidelines or ELGs. These limits are established by EPA for specific types of industries such as foundries and slaughter houses. There are no ELGs applicable to a POTW, therefore this section of the rule does not apply to permit TN0062367.

28. The optional diversion of 0.95 MGD of effluent from the North Plant Lagoon is arbitrary and capricious. This capacity has been for previously permitted for the original North Plant Lagoon and cannot be permitted for the South Plant trickling filter outfall also. It has not been discharged from the South Plant outfall for some time, anyway.

The City of Brownsville historically discharged all of the city's treated sewage from the South Plant location to the Hatchie. As the plant began to age and the city grew in size, the lagoon was built. As with most such facilities, the Lagoon plant was built with extra capacity. Still, the City wished to maintain some overlapping permitted capacity to be discharged from the North Plant to the South Plant if the need arose. Since the Hatchie River had the assimilative capacity and since it had handled the whole flow at one time anyway, the City of Brownsville was actually being sensitive to the environmental realities that the city faced by locating the North Plant outfall in the South Fork Forked Deer, but still maintaining some capacity at the South Plant.

29. The division must make a clear determination as to the "control authority" for enforcing 40 CFR Part 403, General Pretreatment Regulations. In section 3.2 a, the draft permit states, "a. The permittee has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with Section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part *63-3-123 through *63-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent....."

* as published in 2nd Drafts TN0062367 & TN0075078 by DWR/TDEC on April 21, 2014

The references to the Water Quality Control Act contained a typographical error. The reference should have read "Water Quality Control Act Part 69-3-123 through 69-3-128..." Thank you for pointing the error out. Our template has been changed.

30. The division must make clear determination of legal entity for “permittee” under permit section 2.4.1 Civil and Criminal Liability and part 2.4.2 Liability Under State Law when it comes to new unknown industrial permits.

BEA would have the responsibility for issuing Significant Industrial User permits to new industries that discharge to the POTW, and for conducting other required pretreatment monitoring and enforcement activities associated with new industries with such discharges.

31. The conflict of interest displayed by Tennessee in seeking to “reserve” an imagined industrial wastewater discharge capacity through a POTW third-party, Brownsville Energy Authority, for the state of Tennessee speculative Memphis Regional Megasite threatens the ability of EPA to control and ensure fair and thorough compliance with the Clean Water Act in Tennessee. The draft permit also allows the discharge of unknown quantities of potentially toxic pollutants by applying an arbitrary de minimis concept. The rights and protections afforded to the citizens of Tennessee by the Clean Water Act are being violated, and this permit must not be issued.

There is no violation or impropriety involved in this permit. As indicated in earlier draft permits, this proposed permit was written to establish the environmental ground-rules or framework to promote the Memphis Regional Megasite for the economic benefit of Memphis and the surrounding region. The fact that the industry that would occupy the site does not exist did not affect the development of the permit. The information that is needed to develop a permit includes the location of the facility, the constituents of the effluent (pollutants of concern, approximate concentrations of the constituents, the physical properties (temperature, color, etc.), and the approximate design flow. This draft permit was written with one type of industry in mind for the Megasite, an automotive complex. The site effluent characteristics were formulated using EPA documents defining the characteristics of effluents from such sites. Additionally, the permit requires that the permittee submit an EPA Application Form 2C within 2 years after the SBR (and the Megasite) comes online. This form requires the permittee to scan the SBR effluent for all priority pollutants. Additionally, there is an extra clause in the reopener language of the permit that states that the division has the right to reopen the permit (or withdraw the draft) if any of the assumptions or bases used in putting the draft together are not met. This draft permit should help to attract an automotive company to West Tennessee; but the division must continue to fully protect Tennessee’s waters under all circumstances.

The process used in developing this permit is virtually the same as the division uses when many prospective new permittee applies for a permit. The division simply used EPA industry documentation, and the divisions own experiences, to develop effluent information.

32. Is there automotive facility discharge into any of the Tennessee Scenic Rivers?

All of the automotive facilities in Tennessee discharge to POTWs, not directly to waters of the state. None of the POTWs discharge to Scenic Rivers, but one discharges to Exceptional Tennessee Waters, the Duck River.

33. Is there Industrial pollution in any of the Tennessee Scenic Rivers?

Though there are industrial permittees discharging to Scenic Rivers, none of the Scenic Rivers are assessed as being impaired for 'industrial pollutants.' All NPDES permits are protective of the receiving streams and may not cause or contribute to a condition of pollution. One Scenic River, the Clinch River in east Tennessee is impaired for polychlorinated biphenyls (PCBs), which is a legacy pollutant found in sediments that was band in 1979. PCBs were used industrially and commercially as heat insulators, lubricants, and in plastics and coatings among many other uses.

34. What regulatory oversight and enforcement authority will EPA and TDEC have if the Hatchie should inadvertently become contaminated with industrial waste? Who would bear the fine and clean-up costs associated such contamination.

Within the State of Tennessee, the Tennessee Department of Environment and Conservation has regulatory NPDES permitting, oversight and enforcement authority under the Clean Water Act. EPA Region 4 has federal oversight authority over the NPDES program in Tennessee. The second question concerning costs is impossible to answer. The responsible party or parties would be held responsible.

35. BEA commented that, since it has been some time since the original de minimis calculations were made and considerable newer data was available, it would be appropriate to recalculate the de minimis permit limits. This would be especially meaningful, since project consultants were beginning to do preliminary design work on Megasite pretreatment system.

The division agrees and the recalculation is discussed in the RATIONALE in the new draft permit.

36. The pipeline carrying industrial sewage from the Megasite to the South plant could develop leaks and possibly contaminate streams and wetlands that it crosses. The permittee should develop a plan to monitor for leaks and make appropriate repairs.

The division agrees. Leaks or failures of any part of a sewage treatment plant's collection system are a violation of the NPDES permit. Not only is the permittee required to find and repair leaks, they must be reported to the division.

37. In its application supplement analysis of alternatives dated December 13, 2013, BEA failed to evaluate tertiary treatment of the new proposed discharge to the Hatchie River in order to protect the sensitive biota inhabiting the stream.

The alternatives analysis submitted on December 13, 2013 was concerned only with the current discharge scenario. All dischargers to Exceptional Waters must submit an alternatives analysis with an application for permit renewal. Additionally, there is no general regulatory requirement for tertiary treatment of POTW wastewaters. Concerning the proposed discharge of combined Megasite and POTW wastewaters, the plants are being designed to meet the limits required in the proposed permit.

38. BEA requested that the division change language referring to the proposed influent flow to the SBR reactor reactors to reflect that the influent flow would be approximately 3 MGD from the Megasite and approximately 1 MGD from the city. Additionally, BEA expressed

concerns over the fact that some of the metals limits were extremely low and may present problems in designing a pretreatment facility that could consistently meet pretreatment local limits.

NPDES permits are based on 'design capacity,' in this case, 4 MGD. BEA simply wanted to make the point that the design capacity and the corresponding influent capacities were not numbers that were absolute. They represent what can be considered the average highest flow rate that the plant equipment is designed to handle and still operate within design parameters. In consideration of this concept and the fact that these influent flows were intended to as basic design parameters, also, the changes were made.

The division believes that the addition of both monthly average and daily maximum limits, discussed in item 7, will provide the flexibility to meet the stringent metals limits that BEA was also concerned about.

39. Since the Hatchie River is an Exceptional Tennessee Water and of particular environmental significance, EPA requested that the division consider requiring a more protective concentration for calculating the required dilutions for the biomonitoring provisions of the permit. EPA also expressed concerns over the near-fate and transport of the proposed pollutants due to such problems as bank and bottom hugging and physical problems like scouring. They made the suggestion that a further description of the outfall in the permit and near-field mixing studies be conducted by the permittee.

The division recognizes that the Hatchie River is Exceptional Tennessee Waters and is of great environmental importance. It is the division's practice to base the permit biomonitoring dilution parameters on the proposed facility's design flow and the Hatchie's critical low flow or 7Q10. This practice automatically bases the dilution on an abnormally high effluent flow rate and an abnormally low stream flow rate to provide a 'worst case' condition so that any toxicity problems would be noted early. Additionally, the serial dilutions that are required in the permit bracket the permit limit so that a dilution 4 times higher than the permit limit is also used in the test. The division believes that the use of the Inhibition Concentration 25 and the practice of applying extreme flows to arrive at applicable dilution concentrations is sufficient for monitoring the 'no toxics in toxic amounts' Water Quality Criterion. In addition to biological toxicity testing, the addition of both chronic and acute limits for metals was discussed above in items numbered 7 and 14. These limits provide additional protection to the biota of the Hatchie.

Further addressing the near-fate and transport of pollutants, the discharge of BEA's Outfall 001 is extended approximately 20 feet out into the receiving stream. The engineering drawing for the outfall pipe shows that the pipe is located approximately two feet from the river bottom. This location extends the discharge well out away from the bank and into the turbulence of the stream flow. The discharge pipe is also located near the outside azimuth of a horseshoe bend. Additionally, there is a confluence with a small tributary, Sugar Creek, within one to two hundred feet downstream, which should provide additional stream mixing. This location of the discharge provides optimal mixing and minimizes the formation localized stagnation of the discharge plume and the division does not believe that effluent mixing studies would provide meaningful information.

40. Besides the additional wastewater containing toxic pollutants, the proposed facility will generate large quantities of toxic sludge containing heavy metals. What will happen to this toxic material?

The solid waste (or sludge) generated by all sewage treatment plants is closely controlled under federal regulation 40 CFR Part 503 Standards for the use and disposal of Sewage Sludge and state regulation 0400-40-15 Biosolids Management. The proposed new facility will not be an exception.

41. Mr. Nicholas Crafton disagreed with critical low flow (7Q10) used to calculate all permit limits in the previous draft permit. Mr. Crafton used "observed USGS river gauge data determinations at Hwy 79 and also R.M. 135.1 (near Bolivar) and extrapolate(d) for Brownsville discharge at R.M. 76.3..." By a straight line river mile method he obtained a 7Q10 flow of 157 MGD, and using a straight line drainage area method he obtained a 7Q10 flow of 146 MGD. He believes that the flow used in the draft permit calculations was too high causing the limits to be artificially too high. He asked that the division reconsider the flow rate used in the calculation. Additionally, references to the physical location of the Megasite project include only Haywood County and part of the Megasite extends into Fayette County.

In consideration of Mr. Crafton's comment, the division reviewed all of the data used preparation of the previous drafts. Significant time has elapsed since the first de minimis limits were proposed to BEA (April, 2011) and the third draft permit. Even though a streams critical flow characteristics do not change significantly in a short time frame, the stream's 7Q10 low flow was last calculated by USGS during or before 1995. Additionally, there has been additional and more meaningful stream background data gathered in the last several years. The same is true of the plants pretreatment sampling data. Therefore, the division decided to update all data, including the critical flows, used to calculate permit limits for this draft permit. References for the method used to calculate the revised stream flows are given in the RATIONALE and additional details are posted on the divisions DATA VIEWER.

The property obtained by ECD that extends into Fayette County was purchased to provide to provide access to the Interstate Highway. This property has no bearing on this permit.

There were many additional comments and questions concerning the placement of the Megasite project in Haywood County, activities at the Megasite location and costs associated with project construction, construction techniques of the force main in crossing streams, BEA's ongoing and future operating and maintenance costs, and the withdrawal of water from to be used at the proposed automotive facility. These comments are not applicable to NPDES permits and should be addressed to the organization or agency responsible for the activity. Comments concerning BEA's costs should be addressed to BEA, comments concerning water withdrawals and stream crossings should be addressed to the appropriate ARAP permit writer, and questions about the Megasite location should be addressed to the Tennessee Department of Economic and Social Development.

RATIONALE

Brownsville Energy Authority WWTP
NPDES Permit No. TN0062367
Date: April 15, 2014
Permit Writer: Paul Higgins

1. FACILITY INFORMATION

Brownsville Energy Authority WWTP
Mr. Regie Castellaw P.E.- General Manager
Brownsville, Haywood County, Tennessee
(731) 772-8845
Treatment Plant Average Design Flow: 2.03 MGD (1.08 MGD from the
South Trickling Filter plant, 0.95 MGD from the North Lagoon)
Percentage Industrial Flow: <1% from Trickling Filter Plant, 16% from
Lagoon
Treatment Description (current configuration): Lagoon with
chlorination (Outfall 001A) and trickling filter with chlorination
(Outfall 001B)
Treatment Description (proposed future configuration): Sequencing
Batch Reactor rated at 4 MGD

2 RECEIVING STREAM INFORMATION

Hatchie River at mile 76.3
Watershed Group: Hatchie-Lower
Hydrocode: 8010208
Low Flow: 7Q10 = 182 MGD; 30Q5 = 224 MGD
USGS StreamStats Application
(<http://water.usgs.gov/osw/streamstats/index.html>) and USGS stand-
alone low-flow frequency and flow-duration computer program,
TDECv301
Stream Classification Categories:

Domestic Wtr Supply	Industrial	Fish & Aquatic	Recreation
X	X	X	X
Livestock Wtr & Wlife	Irrigation	Navigation	
X	X		

Water Quality Assessment: Fully supporting

3 CURRENT PERMIT STATUS

Permit Type:	Municipal
Classification:	Major
Issuance Date:	31-MAR-09
Expiration Date:	31-MAR-14
Effective Date:	01-MAY-09

4 NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

a. Current and Proposed Plant Configuration – Memphis Regional Megasite

The previous permit and the first two sections of the proposed new permit (Subparts 1.1 and 1.2) are equivalent and applicable to the existing facility configuration at the Brownsville Energy Authority (BEA) wastewater treatment plant (WWTP) located at 170 W. Cooper Street. However, the concept of a new facility that could handle the wastewater discharge from a conceptually proposed industrial complex located in Haywood County and could also replace the aging trickling filter facility for BEA has been under discussion since 2009. Though the industrial complex is still in the proposal phase, a conceptual WWTP has been designed based on theoretical discharges from a typical automotive production complex. Permit subpart 1.3 contains the permit limitations for this proposed new facility that will handle approximately 3 MGD of wastewater from the industrial complex and approximately 1 MGD of domestic wastewater from the City of Brownsville. A discussion of the derivation of these new limits is included in section 6. of the *RATIONALE*, below.

b. Compliance Schedule Summary

Description of Report to be Submitted	Reference Section in Permit
Monthly Discharge Monitoring Reports	1.5.1
Monthly Operational Reports	1.5.4
Monthly Bypass and Overflow Summary Report	1.5.5.1
Industrial Waste Survey Report within 120 days of the effective permit date	3.2.a
Biomonitoring Report beginning within 90 days of the effective permit date	3.4

c. For comparison, this rationale contains a table depicting the previous permit limits and effluent monitoring requirements in Appendix 1.

5 PREVIOUS PERMIT DISCHARGE MONITORING REPORT REVIEW

A review of the DMR data from January 2011 through October 2013 indicates that the BEA has been well within permit limits for all parameters under permit TN0062367.

A complete discharge monitoring report summary is located in *Appendix 2*.

6 PROPOSED EFFLUENT LIMITS AND RATIONALE

CURRENT CONFIGURATION OUTFALL 001 (Trickling Filter/Lagoon)

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	APPLICABLE DAILY LIMIT	RATIONALE
BOD ₅ Lagoon 01A	45	357	50	396	65	515 #/d	T.C.A. 0400-40-05-.09 (for BOD ₅)
BOD ₅ Trickling Filter 01B	30	270	40	360	45	35% Removal	T.C.A. 0400-40-05-.09 (for BOD ₅)
Total Suspended Solids, Lagoon 01A	100	792	110	872	120	951 #/d	T.C.A. 0400-40-05-.09
Total Suspended Solids, Trickling Filter 01B	30	270	40	360	45	35% Removal	T.C.A. 0400-40-05-.09
Dissolved Oxygen (mg/l)	1.0 (daily minimum) instantaneous	—	—	—	—	—	D.O. protection, Refer to 6.1 below
Total Chlorine Residual (mg/l)	—	—	—	—	1.7 (daily maximum)	—	Refer to 6.3 below
Total Nitrogen	—	—	—	—	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
Total Phosphorous	—	—	—	—	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
<i>E. coli</i> (colonies/100ml)	126/100 ml	—	—	—	487/100 ml	—	T.C.A. 0400-40-03-.03, Refer to 6.5 below
Settleable Solids (ml/l)	—	—	—	—	1.0 (daily maximum)	—	T.C.A. 0400-40-05-.09
pH (standard units)	6.0 - 9.0	—	—	—	—	—	T.C.A. 0400-40-03-.03
Flow (MGD):							
Influent	Report	—	—	—	Report	—	Used to quantify pollutant load
Effluent	Report	—	—	—	Report	—	Used to quantify pollutant load
Whole Effluent Toxicity:							
IC ₂₅	1.0% effluent	—	—	—	—	—	Refer to 6.7 below
Metals & Toxics:							Refer to 6.8 below
Sanitary Sewer Overflows, Total Occurrences	Report						Refer to 6.9 below
Dry Weather Overflows, Total Occurrences	Report						Refer to 6.9 below
Bypass of Treatment, Total Occurrences	Report						Refer to 6.9 below

Note: Weekly limitations on BOD₅/CBOD₅ and TSS concentrations are given as required per 40 CFR 133.105(a)(2) or 133.105(e)(1)(ii) & 133.105(b)(2) respectively; daily BOD₅/CBOD₅ and TSS limitations are authorized by T.C.A. 0400-40-05-.09; monthly, weekly, and daily mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD₅/CBOD₅ are required per 40 CFR 133.105(a)(3) and 133.105(e)(1)(iii). Monthly average percent removals for TSS are established per 40 CFR 133.105 (b)(3) and 133.103(c).

PROPOSED CONFIGURATION OUTFALL 001 (Sequencing Batch Reactor)

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	DAILY Maximum Amount (LB/Day)	RATIONALE
CBOD ₅	16	542	20	652	24	795	T.C.A. 0400-40-05-.09 (for BOD ₅)
Total Suspended Solids	30	1062	37	1232	45	1326	T.C.A. 0400-40-05-.09
Dissolved Oxygen (mg/l)	1.0 (daily minimum) instantaneous	—	—	—	—	—	D.O. protection, Refer to 6.1 below
Total Chlorine Residual (mg/l)	—	—	—	—	0.88 (daily maximum)	—	Refer to 6.3 below
Total Nitrogen	—	—	—	—	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
Total Phosphorous	—	—	—	—	Report (qtr avg)	Report (qtr load)	Refer to 6.4 below
<i>E. coli</i> (colonies/100ml)	126/100 ml	—	—	—	487/100 ml	—	T.C.A. 0400-40-03-.03, Refer to 6.5 below
Settleable Solids (ml/l)	—	—	—	—	1.0 (daily maximum)	—	T.C.A. 0400-40-05-.09
pH (standard units)	6.0 - 9.0	—	—	—	—	—	T.C.A. 0400-40-03-.03
Flow (MGD):							
Influent	Report	—	—	—	Report	—	Used to quantify pollutant load
Effluent	Report	—	—	—	Report	—	Used to quantify pollutant load
Whole Effluent Toxicity:							
IC ₂₅	2.2% effluent	—	—	—	—	—	Refer to 6.6 below
Metals & Toxics:	For cadmium, chromium III, chromium VI, copper, lead, nickel, silver and zinc	various			various		Refer to 6.8 below
Sanitary Sewer Overflows, Total Occurrences			Report				Refer to 6.9 below
Dry Weather Overflows, Total Occurrences			Report				Refer to 6.9 below
Bypass of Treatment, Total Occurrences			Report				Refer to 6.9 below

Note: Weekly limitations on BOD₅/CBOD₅ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) or 133.102(a)(4)(2) & 133.102 (b)(2) respectively; daily BOD₅/CBOD₅ and TSS limitations are authorized by T.C.A. 0400-40-05-.09; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD₅/CBOD₅ and TSS are required per 40 CFR 133.102(a)(3) or 133.102(a)(4)(iii) and 133.102 (b)(3) respectively. A minimum 40% daily removal rate is required as equivalent to a daily mass load limitation.

As indicated in *Rationale* section 4.a, APPENDIX 1, and in the two summary tables above, this permit covers two different scenarios for the same site. The first scenario consists of the current situation, which is unchanged over that covered in the previous permit. As indicated by comparison of the first table above (titled 'Current Configuration Outfall 001') to the table in APPENDIX 1, the permit limits and narrative requirements are unchanged from the previous permit. In this scenario, effluent flows from the North Lagoon Treatment Plant and the South Trickling Filter Treatment Plant are sampled separately for conventional pollutants; and then they are sampled jointly for common, concentration based water quality pollutants after the flows have been combined and prior to discharge to the Hatchie. This scenario will be referred to in the proposed permit and *RATIONALE* as, the 'current configuration.' The second scenario, with proposed limits shown in the second table titled 'Proposed Configuration,' covers a sequencing batch reactor that has been designed to treat 3 MGD of wastewater from a proposed automotive complex and 1 MGD of wastewater from the City of Brownsville. Throughout the permit these two scenarios will be referred to as the 'current configuration' and the 'proposed configuration.' Each scenario will be discussed separately under each section of the *RATIONALE* below APPENDIX 5 contains diagrams depicting the current configuration of the Trickling Filter and Lagoon treatment facilities and the proposed Sequencing Batch Reactor and Lagoon Facilities. APPENDIX 6 presents a Brownsville vicinity map showing the rough locations of the facilities in the proposed configuration.

6.1. BOD₅, DISSOLVED OXYGEN, TSS AND PERCENT REMOVALS LIMITS

- a. Current Configuration - Biochemical oxygen demand, or BOD, is a measure of the oxygen used when biological processes break down organic pollutants in wastewater. The amount of oxygen used is more specifically referred to as the five-day biochemical oxygen demand, or BOD₅. This parameter is used in the wastewater industry to measure both the strength of wastewater and the performance of wastewater treatment processes.

Limits on the oxygen demand remaining in the treated wastewater is often necessary to prevent pollutants in the wastewater from driving oxygen in the receiving stream down below the levels necessary to support fish and aquatic life. Additionally, the breakdown of ammonia into other forms of nitrogen also requires oxygen and therefore exerts an oxygen demand on receiving wastewaters.

The dissolved oxygen effluent limitation of 1.0 mg/l is a practical limit achievable by the facility rather than a water-quality based limit necessary to protect fish and aquatic life. A minimum oxygen level of 1.0 mg/l is necessary in treatment systems to prevent nuisance conditions associated with anaerobic conditions.

As indicated in the table in section 6., the TSS limits have been established based on T.C.A. 0400-40-05-.09.

The treatment facility is required to remove 65% of the BOD₅ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all

municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

- (1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
- (2) To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The BOD₅, dissolved oxygen, and TSS limits in the previous have historically been protective of the receiving stream, and have been carried over from the previous permit.

- b. Proposed Configuration – The proposed configuration consists of the installation of a Sequencing Batch Reactor (SBR) that will replace the trickling filter and treat 3 MGD of industrial wastewater from an automotive complex and 1 MGD of domestic sewage from the City of Brownsville. The industrial wastewater was characterized using a publication from USEPA *Enforcement and Compliance Assistance. Profile of the Motor Vehicle Industry*; Washington: GPO, 1995; and other publications concerning automotive industry discharges. Permit limits for BOD₅ and TSS were calculated by using the total of the load contributed by the lagoon discharge and the load contributed by the trickling filter discharge. The industrial site should not contribute significant loads of these pollutants. The concentration limits were then calculated using the total design flow for the new SBR system (4MGD). A table summarizing the old and new BOD₅ and TSS load and concentration limits is included below. There is no increase in loading of BOD or TSS in the proposed limits for the SBR configuration.

BEA has requested authorization to pump 0.25 MGD of treated wastewater from the proposed facility to the North Lagoon Plant outfall to the South Fork Forked Deer River (SFFD). The permit for this STP (TN0075078) limits CBOD₅ and ammonia rather than BOD₅. Additionally, extensive computer modeling has been done for this outfall as well as for two other municipalities that discharge into the same part of the SFFD. Therefore, in order to provide the data necessary to derive pollutant loadings to the SFFD, the BOD₅ limits have been converted to CBOD₅ and ammonia limits for this permit. This was accomplished using the regulatory technology-based effluent limitations ratio of CBOD₅ to BOD₅ that can be found in Tennessee Rule 1200-04-05-.09(1)(a). It is expected that the proposed sequencing batch reactor should successfully nitrify all but insignificant quantities of ammonia. Additionally, because of the relatively high flow rate of the Hatchie River, ammonia toxicity is not expected to be an issue, this pollutant is monitored on a report only basis.

CALCULATION OF BROWNSVILLE STP

FUTURE SBR LIMITS

TN0062367

Facility	Flow MGD	Pollutant	Mo Avg mg/l	Mo Avg Lb/D	Weekly mg/l	Weekly Lb/D	Daily mg/l	Daily Lb/D
Lagoon	0.95	BOD	45	357	50	396	65	515
Exist #1		TSS	100	792	110	872	120	951
TF	1.08	BOD	30	270	40	360	45	
Exist #2		TSS	30	270	40	360	45	
SBR	4	BOD	19	627	23	756	45	890
Future #3		TSS	30	1062	37	1232	45	1326

SBR loads are the total loads of the combined lagoon and trickling filter

The treatment facility is required to remove 85% of the BOD₅ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

- (1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
- (2) To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The federal regulations contain some exceptions to permit requirements for discharges from POTWs that are dilute due to a high percentage of industrial flow and meet other conditions. Since the details of discharges from the site and the proposed plant are still in the proposal stage, it would be impossible to gather sufficient data to justify an exception. A general statement has been placed in the reopener clause that states that the permit may be reopened if any of the assumptions used in the preparation of this permit are not correct or are changed.

6.3. CHLORINATION

Current Configuration (Outfall 001)

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection value of 0.019 mg/l for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.019 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/l)} = \frac{0.019(2.03 + 182)}{2.03} = 1.722 \text{ mg/l} \approx 1.7 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
2.03	=	Q _d , design flow of STP (MGD)
182	=	Q _s , 7Q10 flow of receiving stream (MGD)

The TRC limit in the previous permit was 1.7 mg/l and will be retained in consideration of the anti-backsliding policy.

Proposed Configuration (Outfall 002)

The residual chlorine limit is derived using the mass balance formula and the EPA instream protection value of 0.019 mg/l for fish and aquatic life. Applying this formula yields the following calculation:

$$\frac{0.019 (Q_d + Q_s)}{Q_d} = \text{Limit (mg/l)} = \frac{0.019(4.0 + 182)}{4.0} = 0.884 \text{ mg/l} \approx 0.88 \text{ mg/l}$$

where:

0.019	=	instream protection value (acute)
4.0	=	Q _d , design flow of STP (MGD)
182	=	Q _s , 7Q10 flow of receiving stream (MGD)

6.4. TOTAL NITROGEN AND TOTAL PHOSPHOROUS LIMITATIONS

For major NPDES permits (design flows ≥ 1.0 MGD) EPA recommends continued monitoring for total nitrogen (TN) and total phosphorus (TP) in order to have current nutrient data maintained in its Integrated Compliance Information System (ICIS) database to accurately forecast nutrient loading to the Mississippi River. This ICIS data is being used by the Mississippi Hypoxia Task Force which consists of the EPA and States along the Mississippi River. Tennessee is one of three states in Region 4 which has rivers that ultimately drain to the Mississippi River. The frequency and reporting requirements are carried over from the previous permit.

6.5. *E. COLI* REQUIREMENTS

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection.

As of September 30, 2004, the criterion for fecal coliform has been removed from the State's Water Quality Standards. Thus, the division imposes an *E. coli* limit on discharges of treated sewage for the protection of recreational use of the stream in lieu of the fecal coliform limit. The *E. coli* daily maximum limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters. The limits and monitoring requirements are carried over from the previous permit.

6.6. BIOMONITORING

Current Configuration (Outfall 001)

The division's evaluation of the toxicity data generated by the biomonitoring analysis indicated that the lagoon's effluent did not exhibit a reasonable potential to violate the division's narrative water quality criterion, "no toxics in toxic amounts." As indicated in the past, it is the division's policy to require Publicly Owned Treatment Works with active pretreatment programs to conduct toxicity testing due to the nature of industrial wastewaters and as a means of monitoring for possible unreported discharges. Annual biomonitoring has been carried over into this permit.

The following calculation is the required dilution at which chronic toxicity testing must meet permit requirements.

$$IC_{25} \% = \frac{\text{Design Flow}}{\text{Low Flow} + \text{Design Flow}} * 100 \geq \frac{2.03}{182 + 2.03} * 100 \sim 1.0\%$$

where:

182	=	Low Flow - 7Q10 (MGD)
2.03	=	Design Flow Capacity (MGD)
IC ₂₅	=	Concentration causing 25% reduction in survival, reproduction and growth of test organisms

Proposed Configuration (Outfall 002)

If the new automotive production complex and SBR become a reality, the nature of the discharge to the Hatchie River will be completely changed. Not only will new industrial processes be discharging wastewater to BEA's WWTP, but the treatment process itself will be completely different. Particularly since the receiving stream is Exceptional Tennessee Waters, the division's narrative water quality criterion, "no toxics in toxic amounts" must be re-evaluated. For new facilities, the division typically requires quarterly biomonitoring, which has been included in the requirements for Outfall 002.

The following calculation is the required dilution at which chronic toxicity testing must

meet permit requirements if effluent from the South SBR Plant are included in the discharge of Outfall 002.

$$IC_{25} \% = \frac{\text{Design Flow}}{\text{Low Flow} + \text{Design Flow}} * 100 \geq \frac{4.0}{182 + 4.0} * 100 \sim 2.2\%$$

where:

182 = Low Flow - 7Q10 (MGD)
 4.0 = Design Flow Capacity (MGD)
 IC₂₅ = Concentration causing 25% reduction in survival, reproduction and growth of test organisms

6.7. METALS AND TOXICS, PRETREATMENT AND PASS THROUGH LIMITATIONS

Pretreatment Requirements & Pass Through Limitations, Both Configurations

Pass-through limitations (PTLs) for heavy metals and other toxic substances have been recalculated as part of the permit issuance process. These PTLs were calculated using all the parameters for the current configuration and the new Water Quality Criteria rule promulgated in 2013. There was only one change in the new PTLs over those previous issued. During the calculation and verification process, we discovered that the PTL for lead (12.24 ug/l) that had been identified as applicable due to 'anti-backsliding' rules, was actually originally calculated and issued in error. The lead limit was recalculated using current data and the new value issued with the other applicable PTLs. A summary of the current semi-annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. APPENDIX 3 lists the metal and toxic parameters calculations and the procedure used to derive the results. These PTLs are applicable only to discharges from the current configuration, the combined discharge from the trickling filter plant and the lagoon.

Pass through limitations must also be re-evaluated when there are changes in industrial waste contribution to the POTW. Since the proposed configuration involves significant changes in both the quantity and nature of the industrial discharges to the wastewater treatment plant, as well as changes to the design of the wastewater treatment plant itself, PTLs must be developed to reflect the proposed conditions. Under the proposed configuration, the permit will have 'de minimis' metals limits applicable as regular NPDES permit effluent discharge limits (discussed below). These permit limits will be applicable to the effluent on the whole, and should be used when calculating local limits for the automotive complex. In the previous discussion of PTLs for the proposed configurations, the statement was made that the current dischargers to the trickling filter plant would qualify for traditional PTLs since they would be considered 'existing sources.' After considerable internal discussions and clarifying discussions with EPA, the application of the de minimis argument found in Rule 0400-40-03-.06(4)(c)(1) applies to the entire discharge from the proposed plant. In other words, the de minimis, water quality-based limits apply to the entire discharge and, therefore those limits become the PTLs and local limits must be based on the permit limits for all Significant Industrial Users (SIUs). New

PTLs have been developed and are in review by the pretreatment section for the proposed configuration. The only “metal” pollutant that is not covered by a de minimis limit is mercury because it is not a pollutant of concern. The PTLs will be issued by the pretreatment section at the appropriate time.

Proposed Configuration Limits on New Discharge – General Derivation

Since the proposed configuration constitutes a ‘new or increased’ discharge, the Tennessee Antidegradation Policy, Rule 0400-40-03-.06(4)(c)(1), imposes certain restrictions on the pollutant loadings that may be discharged to the Hatchie River, Exceptional Tennessee Waters. The rule states that any discharge of a pollutant over and above a ‘de minimis’ quantity must be justified by demonstrating that there are no reasonable alternatives to the degradation and that the resultant degradation above a de minimis level is necessary to promote important economic and social development in the area. De minimis discharges are defined in the Rule at 0400-40-03-.04(4) as 5% of the assimilative capacity of the receiving stream for a particular pollutant from a single discharger or 10% of the assimilative capacity of the stream if multiple discharges are concerned. This project is a joint program promoted by various departments of the state to benefit the entire Memphis metropolitan and surrounding area. However, early on in the project, the decision was made to maintain the highest environmental standards for new installations under this project. For this reason, the permit writer was requested to apply de minimis limits to new pollutants of concern from the automotive complex.

The industrial wastewater from the automotive complex was characterized using a publication from USEPA *Enforcement and Compliance Assistance, Profile of the Motor Vehicle Industry*; Washington: GPO, 1995; and other publications concerning automotive industry discharges. The wastewater might be expected to contain significant levels of metals such as cadmium, copper, lead, nickel, silver, chrome III & VI, zinc and cyanide. De minimis limits were calculated for these parameters and monthly monitoring for these pollutants will be required. If monitoring indicates elevated levels of these parameters, it may be necessary to increase monitoring frequency or add additional related parameters to assure water quality. The spreadsheet with these calculations is in the permit file and is available from the permit writer by request. Grab type sampling techniques were chosen because the planned pretreatment discharge scheme and the SBR effluent discharge scheme both include large lagoons that should equalize fluctuations.

The division used the EPA publication Profile of the: Motor Vehicle Assembly Industry; EPA 310-R-95-009 to identify and evaluate the potential discharges of organic pollutants from the automotive Megasite to the South SBR Plant. In Exhibits 20 and 21 of the publication, EPA listed the releases and transfers of hazardous pollutants from the auto assembly and auto parts industries. According to these tables, pollutants of concern with relatively low instream toxicity characteristics such as trichloroethylene, tetrachloroethylene, and benzene, are discharged only to POTWs and at a rate of about 10 to 20 pounds per year. This level would be insignificant in a discharge flow of approximately 4 MGD.

Proposed Configuration Limits on New Discharge – Limit Recalculation

When reviewing draft permit comments, previous draft permits themselves, and the critical nature of this proposed discharge, It became apparent that a recalculation of the de minimis metals limits would be in order. The critical low flow information was last recalculated during or prior to 1995. The United States Geographical Service has developed new data and stand-alone low-flow frequency and flow-duration computer program, TDECv301. Additionally, new stream background data was available that used lower detection levels for the pollutants of concern. Similarly, more recent BEA Semi-annual Report data, also using lower detection levels, was available.

The limits obtained by using the new data are slightly different than those in the previous drafts. Some of the limits are higher and some are lower. However, the most significant change in the de minimis limits in the current proposed draft permit is the fact that there are two sets of limits. There are now monthly average load limits similar to the limits in the previous drafts. In addition, acute daily maximum concentration limits have been added. These limits address near-field toxicity issues as in areas directly around the discharge point into the receiving stream.

In addition to the recalculated limits, a table containing load limits that may not be exceeded if the effluent is to be pumped to the North Plant outfall (South Fork Forked Deer River) has also been included in this proposed draft permit.

6.8. OVERFLOW AND BYPASS REPORTING

For the purposes of demonstrating proper operation of the collection, transmission, and treatment system, the permit defines overflow as any release of sewage other than through permitted outfalls. This definition includes, but is not necessarily limited to, sanitary sewer overflows and dry weather overflows as defined. For example, a collection system blockage or hydraulic overload that causes backup and release of sewage into a building during a wet weather event may not clearly fit either the definition of a sanitary sewer overflow or a dry weather overflow. Still, any unpermitted release potentially warrants permittee mitigation of human health and/or water quality impacts via direct or indirect contact and demonstrates a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

However, for the more typical, unpermitted, releases into the environment, this permit intends interchangeable use of the terms, “overflow” and “sanitary sewer overflow” for compliance reporting purposes.

7 OTHER PERMIT REQUIREMENTS AND CONDITIONS

7.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984.

7.2. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

7.3. PRETREATMENT PROGRAM

The Brownsville Energy Authority WWTP has an approved pretreatment program. An updated Industrial Waste Survey must be completed within 120 days of the effective date of the permit, unless such a survey has been submitted within 3 years of the effective date.

All permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium (trivalent and hexavalent and total if drinking water use applies), copper, lead, nickel, zinc, silver, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

7.4. BIOSOLIDS/SLUDGE MANAGEMENT

The Clean Water Act (CWA) requires that any NPDES permit issued to a publicly owned treatment works or any other treatment works treating domestic sewage shall comply with 40 CFR Part 503, the federal regulation governing the use and disposal of sewage sludge. It is important to note that “biosolids” are sewage sludge that has been treated to a level so that they can be land applied.

The language in subpart 3.3 of the permit, relative to biosolids management, a CWA requirement, allows the “permitting authority” under 40 CFR Part 503.9(p) to be able to enforce the provisions of Part 503. The “permitting authority” relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; in the case of Tennessee it is EPA-Region 4.

Tennessee regulates the land application of biosolids under state rules, Chapter 0400-40-15. The state rules became effective on June 30, 2013. Under these state rules, all facilities that land apply biosolids must obtain a biosolids permit from the division. The land application of biosolids under state rules will be regulated through either a general permit or by an individual permit. It is anticipated that the permitting of biosolids land application will begin near the beginning of calendar year 2014. Questions about the division's biosolids regulations and permitting program should be directed to the division's Biosolids Coordinator at:

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
(615) 532-0625

7.5. PERMIT TERM

This permit is being reissued to coordinate its reissuance with other permits located within the Hatchie-Lower Watershed. It will expire in September, 2019.

8 ANTIDegradation Statement/Water Quality Status

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# **TN08010208001_2000**.

The division has made a determination of the receiving waters associated with the subject discharge(s) and has found the Hatchie River to be Exceptional Tennessee Waters. No permanent degradation of water quality will be allowed unless the applicant demonstrates to the Water Quality Control Board that the degradation is for necessary economic or social development and will not interfere with or become injurious to any existing uses. The specific requirements for this demonstration are described in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06(4).

Furthermore, the Hatchie River has been assessed as fully supporting of all designated uses. According to 0400-40-03-.06(4)(c)1., "new or increased discharges that would cause degradation of any available parameter above the level of de minimis and domestic wastewater will only be authorized if the applicant has demonstrated to the department that reasonable alternatives to degradation are not feasible...." On November 11, 2013, Brownsville Energy Authority submitted an alternatives analysis for their existing trickling filter wastewater treatment facility. The alternatives included constructing a new land application sewage treatment plant

and transferring the wastewater to the City of Jackson's Miller Avenue STP. Both alternatives were rejected due to capital costs and increased energy usage. BEA chose to maintain the status quo and continue a rigorous program to refurbish the trickling filter plant

This permit contains requirements for a proposed sequencing batch reactor that would be constructed to service conceptually a proposed industrial complex located in Haywood County and could also replace the aging trickling filter facility for the Brownsville Energy Authority. Though the industrial complex is still in the proposal phase, a conceptual WWTP has been designed based on theoretical discharges from a typical automotive production complex. In order to meet the requirements of the state rule for exceptional waters and, furthermore to protect the Hatchie River, the loading of conventional pollutants (BOD₅ and TSS) has not been increased over the previous permit. The only additional significant pollutants expected from the proposed automotive manufacturing site are metals. The division calculated de minimis limits for metals pollutants of concern and the permit requires monthly monitoring. The proposed monitoring meets the requirements of the state's Antidegradation Policy, and will be protective of an important Tennessee resource.

There are no TMDLs applicable to the Hatchie River.

APPENDIX 1 PREVIOUS PERMIT LIMITS

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	APPLICABLE DAILY LIMIT	MEASUREMENT FREQUENCY
BOD ₅ 001A Lagoon	45	357	50	396	65	515 #/d	Weekly
BOD ₅ 001B Trickling Filter	30	270	40	360	45	35% Removal	3/week
Total Suspended Solids – 001A	100	792	110	872	120	951 #/d	Weekly
Total Suspended Solids – 001B	30	270	40	360	45	35% Removal	3/week
Dissolved Oxygen (mg/l)	1.0 (daily minimum) instantaneous	—	—	—	—	—	5/week
Total Chlorine Residual (mg/l)	—	—	—	—	1.7 (daily maximum)	—	5/week
Total Nitrogen	Report	—	—	—	Report	—	Quarterly
Total Phosphorous	Report	—	—	—	Report	—	Quarterly
<i>E. coli</i> (colonies/100ml)	126/100 ml	—	—	—	487/100 ml	—	3/week
Settleable Solids (ml/l)	—	—	—	—	1.0 (daily maximum)	—	5/week
pH (standard units)	6.0 - 9.0	—	—	—	—	—	5/week
Flow (MGD):							
Influent	Report	—	—	—	Report	—	7/week
Effluent	Report	—	—	—	Report	—	7/week
Whole Effluent Toxicity:							
IC ₂₅	1 % effluent	—	—	—	—	—	Annual
Metals & Toxics:							
Sanitary Sewer Overflows, Total Occurrences	Report						continuous
Dry Weather Overflows, Total Occurrences	Report						continuous
Bypass of Treatment, Total Occurrences	Report						continuous

APPENDIX 2

Discharge Monitoring Report Summary

Discharges from Trickling Filter 001B

Monitoring End Date	BOD5 Mo Avg mg/l	BOD5 Wk Avg mg/l	BOD5 D Max mg/l	BOD5 Mo Avg lb	BOD5 Wk Avg lb	BOD5 Removal Daily Min %	BOD5 Removal Mo Avg Min %
Limit	30	40	45	270	360	35	65
01/31/2011	12	14	19	84	97	90	93
02/28/2011	18	23	24	154	221	87	91
03/31/2011	12	13	15	106	127	85	90
04/30/2011	9	11	13	81	92	85	92
05/31/2011	10	12	15	94	104	89	93
06/30/2011	8	10	11	56	59	93	95
07/31/2011	6	8	9	46	55	79	96
08/31/2011	5	5	7	34	42	93	97
09/30/2011	4	5	10	29	38	93	97
10/31/2011	4	4	5	27	33	94	97
11/30/2011	4	4	6	27	33	93	97
12/31/2011	4	5	6	29	38	93	96
01/31/2012	8	10	11	53	104	87	95
02/29/2012	8	9	12	47	60	91	94
03/31/2012	8	11	17	50	75	89	94
04/30/2012	9	10	14	37	44	87	94
05/31/2012	9	10	11	32	38	92	95
06/30/2012	8	12	12	28	46	87	94
07/31/2012	5	6	7	16	21	94	96
08/31/2012	3	3	4	10	12	96	98
09/30/2012	7	12	15	26	41	88	95
10/31/2012	6	7	8	28	32	88	95
11/30/2012	ND	ND	ND	ND	ND	ND	ND
12/31/2012	12	13	17	65	76	82	89
01/31/2013	10	13	16	59	79	81	90
02/28/2013	9	10	17	55	66	79	89
03/31/2013	12	13	16	62	70	71	86
04/30/2013	9	12	14	68	87	81	90
05/31/2013	5	6	8	35	41	87	94
06/30/2013	5	6	8	32	43	90	94
07/31/2013	7	9	10	36	53	91	93
08/31/2013	5	7	9	24	37	88	96
09/30/2013	5	6	10	26	31	93	96
10/31/2013	7	9	11	31	47	86	93

ND = No Discharge

Discharges from Trickling Filter 001B

Monitoring End Date	TSS Mo Avg mg/l	TSS Wk Avg mg/l	TSS D Max mg/l	TSS Mo Avg lb	TSS Wk Avg lb	TSS Removal Daily Min %	TSS Removal Mo Avg Min %
Limit	30	40	45	270	360	35	65
01/31/2011	10	15	24	69	111	83	94
02/28/2011	9	15	18	81	149	91	96
03/31/2011	9	12	20	81	96	83	94
04/30/2011	9	12	16	77	95	83	94
05/31/2011	8	11	18	79	120	85	95
06/30/2011	8	11	18	52	76	93	96
07/31/2011	7	11	14	50	80	77	96
08/31/2011	6	7	12	42	49	88	96
09/30/2011	5	10	12	39	80	88	96
10/31/2011	5	9	12	40	64	86	95
11/30/2011	6	9	12	41	66	92	95
12/31/2011	4	5	10	32	44	89	94
01/31/2012	6	9	14	44	100	84	95
02/29/2012	9	21	40	54	106	62	91
03/31/2012	6	8	10	34	45	91	96
04/30/2012	6	7	10	22	26	88	96
05/31/2012	7	9	12	27	34	86	95
06/30/2012	6	9	16	19	26	79	94
07/31/2012	5	7	12	16	19	80	93
08/31/2012	4	5	8	13	16	92	96
09/30/2012	5	9	10	17	29	90	96
10/31/2012	4	6	8	16	25	90	95
11/30/2012	ND	ND	ND	ND	ND	ND	ND
12/31/2012	9	11	16	50	63	76	91
01/31/2013	10	14	16	59	79	71	92
02/28/2013	6	9	16	40	63	73	90
03/31/2013	8	11	18	42	58	72	85
04/30/2013	8	11	20	61	83	75	93
05/31/2013	5	7	12	35	58	88	95
06/30/2013	7	12	26	45	100	74	94
07/31/2013	5	9	16	25	40	85	93
08/31/2013	5	7	10	23	35	78	95
09/30/2013	5	7	16	26	38	93	96
10/31/2013	7	12	16	33	65	82	94

ND = No Discharge

Discharges to Hatchie River Outfall 001

Monitoring End Date	Flow Mo Avg MGD	Flow D Max MGD	TRC D Max mg/l	<i>E. coli</i> D Max #/100ml	<i>E. coli</i> Geo Mean #/100ml	Settleable Solids D Max ml/l	pH Max SU	pH Min SU	DO Min mg/l
Limit			1.7	487	126	1	9	6	1
01/31/2011	0.865	1.239	0.79	44	6	BDL	7.3	7.0	6.3
02/28/2011	0.815	1.403	0.63	162	14	BDL	7.3	7.1	6.2
03/31/2011	1.115	1.578	0.59	84	8	BDL	7.4	7.0	5.4
04/30/2011	1.098	2.026	0.53	28	11	BDL	7.4	7.0	4.5
05/31/2011	1.165	1.918	0.56	64	11	BDL	7.5	6.8	5.9
06/30/2011	0.854	1.593	0.90	176	59	BDL	7.4	6.6	5.6
07/31/2011	0.870	1.296	0.55	100	47	BDL	7.1	6.7	4.7
08/31/2011	0.885	1.058	0.92	110	31	BDL	7.1	6.6	6.0
09/30/2011	0.903	1.403	1.26	84	10	BDL	7.3	6.8	6.3
10/31/2011	0.895	1.043	1.08	20	6	BDL	7.2	6.9	7.1
11/30/2011	0.899	1.703	0.92	28	7	BDL	7.4	7.0	6.5
12/31/2011	0.894	1.513	0.97	16	7	BDL	7.4	6.7	6.7
01/31/2012	0.680	1.485	1.30	16	5	BDL	7.3	6.9	6.1
02/29/2012	0.701	1.178	1.40	32	5	BDL	7.3	6.9	6.0
03/31/2012	0.639	1.149	0.90	72	8	BDL	7.3	6.7	5.7
04/30/2012	0.472	0.678	1.10	44	11	BDL	7.3	6.6	4.5
05/31/2012	0.471	0.864	0.42	44	16	BDL	7.1	6.6	4.6
06/30/2012	0.429	0.605	0.41	156	42	BDL	7.0	6.4	4.0
07/31/2012	0.402	0.540	1.30	152	32	BDL	7.1	6.6	5.1
08/31/2012	0.390	0.586	1.70	114	11	BDL	7.4	6.7	6.3
09/30/2012	0.483	0.796	1.60	172	24	BDL	7.3	6.8	6.4
10/31/2012	0.474	0.710	1.54	60	10	BDL	7.3	7.0	6.0
11/30/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND
12/31/2012	0.661	0.330	1.60	178	9	BDL	7.5	7.1	6.5
01/31/2013	0.721	1.118	1.60	28	7	BDL	7.5	7.1	7.4
02/28/2013	0.738	1.089	0.99	94	12	BDL	7.5	7.0	6.6
03/31/2013	0.692	1.025	1.03	68	7	BDL	7.5	7.0	6.2
04/30/2013	0.883	1.250	0.52	102	8	BDL	7.3	6.9	4.6
05/31/2013	0.834	1.289	0.55	36	6	BDL	7.3	6.7	4.7
06/30/2013	0.764	1.391	0.63	109	18	BDL	7.2	6.8	4.5
07/31/2013	0.650	0.990	1.50	114	30	BDL	7.3	6.8	4.6
08/31/2013	0.618	0.920	1.20	144	10	BDL	7.2	6.7	5.6
09/30/2013	0.604	0.924	1.30	86	9	BDL	7.2	6.7	5.8
10/31/2013	0.556	0.921	1.20	106	10	BDL	7.3	6.8	5.5

ND = No Discharge

APPENDIX 3

Metal and Toxic Parameter Calculations

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

- a. The most recent background conditions of the receiving stream segment are compiled. This information includes:
 - * 7Q10 of receiving stream (194 MGD, USGS)
 - * Calcium hardness (25.3 mg/l, default)
 - * Total suspended solids (38 mg/l, default)
 - * Background metals concentrations (monitoring or ½ water quality criteria)
 - * Other dischargers impacting this segment (none)
 - * Downstream water supplies, if applicable
- b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.
- c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.
- d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.
- e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$C_w \leq \frac{(S_A) [C_m (Q_s + Q_w) - Q_s C_s]}{Q_w}$$

where (S_A) is the percent "Stream Allocation".

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

Fish and Aquatic Life Protection

7Q10 - Low flow under natural conditions

1Q10 - Regulated low flow conditions

Other than Fish and Aquatic Life Protection

30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.
3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.
4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (C_w). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream.

Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated

using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{\text{diss}}}{C_{\text{total}}} = \frac{1}{1 + \{ [K_{\text{po}}] [\text{ss}^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

- Column 5:** The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.
- Column 6:** The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.
- Column 7:** The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.
- Column 8:** The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.
- Column 9:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).
- Column 10:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both "Recreation" and "Domestic Water Supply."
- Column 11:** The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.
- Column 12:** The Calculated Effluent Concentration associated with Organism Consumption.
- Column 13:** The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

Column 15: The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, and (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only.

WQ Based Effluent Calculations

2013 WQC

PASS-THROUGH LIMITATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY:
Brownsville WWTP
PERMIT #:
TN0062367
DATE:
12/17/2013
CALC BY:
PJH

non-regulated stream worksheet (7Q10)

Stream	Stream	Waste	Ttl. Susp.	Hardness	Margin of
(7Q10)	(30Q5)	Flow	Solids	(as CaCO3)	Safety
(mgd)	(mgd)	(gpd)	(mg/l)	(mg/l)	(%)
194.000	296.000	2.030	38	253	50

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	PARAMETER		
PARAMETER	Stream Backgmd. Conc. [ug/l]	Fish/Aqua. Life (F & AL) WQC lab conditions Chronic [ug/l]	Acute [ug/l]	Fraction Dissolved [Fraction]	F & AL - instream allowable ambient conditions (Tot) Chronic [ug/l]	Acute [ug/l]	Calc. Effluent Concentration based on F & AL Chronic [ug/l]	Acute [ug/l]	In-Stream Criteria Organisms [ug/l]	Human Health Water Quality Criteria * Water/Organisms [ug/l]	DWS [ug/l]	Calc. Effluent Concentration ** Water/Organisms [ug/l]	DWS [ug/l]	effluent limited case ug/l	PARAMETER		
Copper (a,b)	2.035	2.767	3.681	0.275	10.081	13.410	389.53	550.26	N/A	N/A	N/A	N/A	N/A	80.0	Copper (a,b)		
Chromium III	1.761	24.047	184.863	0.188	128.123	984.960	6102.06	47472.92	N/A	N/A	N/A	N/A	N/A		Chromium III		
Chromium VI	1.761	11.000	16.000	1.000	11.000	16.000	446.97	688.39	N/A	N/A	N/A	N/A	N/A		Chromium VI		
Chromium, Total	1.761	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100.0	N/A	N/A	6970.28	Chromium, Total		
Nickel (a,b)	3.311	16.259	146.388	0.301	54.069	486.801	2452.39	23346.10	4600.0	610.0	100.0	326106.17	43042.21	6861.10	180.0	Nickel (a,b)	
Cadmium (a,b)	0.165	0.094	0.528	0.287	0.329	1.842	8.03	81.07	N/A	N/A	5.0	N/A	N/A	343.11	5.0	Cadmium (a,b)	
Lead (a,b)	1.671	0.548	14.070	0.147	3.726	95.617	100.06	4536.83	N/A	N/A	5.0	N/A	N/A	237.01	45.0	Lead (a,b)	
Mercury (T) (c,e)	0.006	0.770	1.400	1.000	0.770	1.400	36.89	67.31	0.051	0.05	2.0	3.20	3.12	141.46	0.4	Mercury (T) (c,e)	
Silver (a,b,f)	0.151	N/A	0.303	1.000	N/A	0.303	N/A	7.38	N/A	N/A	N/A	N/A	N/A	N/A	5.0	Silver (a,b,f)	
Zinc (a,b)	7.880	36.869	36.570	0.214	172.231	170.834	7939.36	7871.89	26000.0	7400.0	N/A	1843972.00	524425.69	N/A	200.0	Zinc (a,b)	
Cyanide (d)	2.600	5.200	22.000	1.000	5.200	22.000	126.84	938.00	140.0	140.0	200.0	9748.92	9748.92	14005.52	230.0	Cyanide (d)	
Toluene	0.000								15000.0	1300.0	1000.0	1064150.25	92226.35	70943.35	15.0	Toluene	
Benzene	0.000								510.0	22.0	5.0	36181.11	1560.75	354.72	3.0	Benzene	
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	N/A	N/A	14188.67	30.0	1,1,1 Trichloroethane	
Ethylbenzene	0.000								2100.0	530.0	700.0	148981.03	37599.98	49660.34	4.0	Ethylbenzene	
Carbon Tetrachloride	0.000								16.0	2.3	5.0	1135.09	163.17	354.72	15.0	Carbon Tetrachloride	
Chloroform	0.000								4700.0	57.0	N/A	333433.74	4043.77	N/A	85.0	Chloroform	
Tetrachloroethylene	0.000								33.0	6.9	5.0	2341.13	489.51	354.72	25.0	Tetrachloroethylene	
Trichloroethylene	0.000								300.0	25.0	5.0	21283.00	1773.58	354.72	10.0	Trichloroethylene	
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	N/A	9932.07	7094.33	1.5	1,2 trans Dichloroethylene	
Methylene Chloride	0.000								5900.0	46.0	N/A	418565.76	3263.39	N/A	50.0	Methylene Chloride	
Total Phenols	0.000								860000.0	10000.0	N/A	61011280.79	709433.50	N/A	50.0	Total Phenols	
Naphthalene	0.000								N/A	N/A	N/A	N/A	N/A	N/A	1.0	Naphthalene	
Total Phthalates	0.000								N/A	N/A	N/A	N/A	N/A	N/A	64.5	Total Phthalates	
Chlorine (T. Res.)	5.500	11.000	19.000	1.000	11.000	19.000	536.62	1309.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Chlorine (T. Res.)

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.

b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.

c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.

d The criteria for this parameter is in the total form.

e Previously, the Division established that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.

f Silver limit is daily max if column 8 is most stringent.

g When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.

h When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.

* Domestic supply included in river use so pick from columns 7, 8, 12, 13, 14, 15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.

** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

SAR Summary

Data for Current Configuration

	PTL 2/11/2009	85% PTL	Proposed PTL 12/17/2013	Oct-13	Apr-13	Oct-12	Apr-12	Oct-11	Apr-11	Oct-10	Apr-10	Oct-09	Apr-09
TN0062367													
COPPER	0.08000	0.06800	0.08000	0.01540	0.00953	0.01280	0.01740	0.01480	0.01800	0.01800	0.01870	0.02220	0.00040
CHROMIUM, III	report	n/a	report	0.00065	0.00061	0.00070	0.00333	0.00333	0.00040	0.05000	0.05000	0.00200	
CHROMIUM, VI	report	n/a	report	0.02000	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000	0.00300	
CHROMIUM	0.06000	0.05100	0.06000	0.00065	0.00061	0.00070	0.00008	0.00333	0.00040	0.00278		0.00200	0.00040
NICKEL	0.18000	0.15300	0.18000	0.00651	0.00133	0.00028	0.00028	0.00032	0.00032	0.00644	0.00644	0.00120	0.01280
CADMIUM	0.00500	0.00425	0.00500	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00060	0.00080	0.00020
LEAD	0.01224	0.03825	0.04500	0.00040	0.00065	0.00075	0.00080	0.00080	0.00080	0.00080	0.00226	0.00120	0.00120
MERCURY	0.00040	0.00034	0.00040	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00040	0.00020	0.00020
SILVER	0.00500	0.00425	0.00500	0.00020	0.00020	0.00020	0.00020	0.00024	0.00024	0.00024	0.00040	0.00040	0.00032
ZINC	0.20000	0.17000	0.20000	0.01400	0.01600	0.01330	0.01950	0.01680	0.01260	0.00387	0.03470	0.01750	0.01520
CYANIDE	0.12668	0.10781	0.12684	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
TOLUENE	0.01500	0.01275	0.01500										
BENZENE	0.00300	0.00255	0.00300										
1,1,1 TRICHLOROETHANE	0.03000	0.02550	0.03000										
ETHYLBENZENE	0.00400	0.00340	0.00400										
CARBON TETRACHLORIDE	0.01500	0.01275	0.01500										
CHLOROFORM	0.08500	0.07225	0.08500										
TETRACHLOROETHYLENE	0.02500	0.02125	0.02500										
TRICHLOROETHYLENE	0.01000	0.00850	0.01000										
1,2 TRANSDICHLOROETHYL	0.00150	0.00128	0.00150										
METHYLENE CHLORIDE	0.05000	0.04250	0.05000										
TOTAL PHENOLS	0.05000	0.04250	0.05000	0.00968	0.01420	0.01030	0.01690	0.01310	0.00240	0.01170	0.01780	0.03180	0.02430
NAPHTHALENE	0.00100	0.00085	0.00100										
TOTAL PHTHALATES	0.06450	0.05483	0.06450										

Bolded in effluent data = potential to exceed 85% of proposed PTLs
Shaded means detection level

Data for Proposed Configuration

	PTL	85% PTL	PTL	Oct-14	Apr-14	Oct-13	Apr-13	Oct-12	Apr-12	Oct-11	Apr-11	Oct-10	Apr-10
TN0062367	2/11/2009		12/17/2013										
COPPER	0.08000	0.06800	0.08000	0.00817	0.00693	0.01540	0.00953	0.01280	0.01740	0.01480	0.01800	0.01800	0.01870
CHROMIUM, III	report	n/a	report	0.00008	0.00020	0.00065	0.00061	0.00070	0.00333	0.00333	0.00040	0.05000	0.05000
CHROMIUM, VI	report	n/a	report	0.01000	0.01000	0.02000	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000
CHROMIUM	0.06000	0.05100	0.06000	0.00008	0.00020	0.00065	0.00061	0.00070	0.00008	0.00333	0.00040	0.00278	
NICKEL	0.18000	0.15300	0.18000	0.00062	0.00900	0.00651	0.00133	0.00028	0.00028	0.00032	0.00032	0.00644	0.00644
CADMIUM	0.00500	0.00425	0.00500	0.00012	0.00030	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00060
LEAD	0.01224	0.03825	0.04500	0.00260	0.00100	0.00040	0.00065	0.00075	0.00080	0.00080	0.00080	0.00080	0.00226
MERCURY	0.00040	0.00034	0.00040	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00020	0.00040
SILVER	0.00500	0.00425	0.00500	0.00020	0.00050	0.00020	0.00020	0.00020	0.00020	0.00024	0.00024	0.00024	0.00040
ZINC	0.20000	0.17000	0.20000	0.00783	0.00729	0.01400	0.01600	0.01330	0.01950	0.01680	0.01260	0.00387	0.03470
CYANIDE	0.12668	0.10781	0.12684	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
TOLUENE	0.01500	0.01275	0.01500										
BENZENE	0.00300	0.00255	0.00300										
1,1,1 TRICHLOROETHANE	0.03000	0.02550	0.03000										
ETHYLBENZENE	0.00400	0.00340	0.00400										
CARBON TETRACHLORIDE	0.01500	0.01275	0.01500										
CHLOROFORM	0.08500	0.07225	0.08500										
TETRACHLOROETHYLENE	0.02500	0.02125	0.02500										
TRICHLOROETHYLENE	0.01000	0.00850	0.01000										
1,2 TRANSDICHLOROETHYL	0.00150	0.00128	0.00150										
METHYLENE CHLORIDE	0.05000	0.04250	0.05000										
TOTAL PHENOLS	0.05000	0.04250	0.05000	0.00395	0.00395	0.00968	0.01420	0.01030	0.01690	0.01310	0.00240	0.01170	0.01780
NAPHTHALENE	0.00100	0.00085	0.00100										
TOTAL PHTHALATES	0.06450	0.05483	0.06450										
<p>Bolded in effluent data = potential to exceed 85% of proposed PTLs</p> <p>Shaded means detection level</p>													

APPENDIX 4
WQ Based Effluent Calculations- Other Compounds

Brownsville Energy Authority WWTP (Rationale)
NPDES Permit TN0062367
Page R- 29

WATER QUALITY BASED EFFLUENT CALCULATIONS OUTFALL 001															
FACILITY: Brownsville Tricking Filter															
PERMIT #: TN0362367															
DATE: 10/23/2013															
Stream (TQID)	Stream (3Q2)	Waste Flow (MGD)	T&S Flow (MGD)	Hardness as CaCO3 (mg/l)	Margin of Safety (%)										
194.0	286.6	2.0	22	25	50										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
PARAMETER	Stream Background Conc. (ug/l)	Detection Levels		F & AL- Instream allowable ambient conditions (Tot)		Calc. Effluent Concentration based on F & AL, Ca		Human Health Water Quality Criteria (3Q2)							a.g. daily effluent (cu ft, gal)
	SDM (ug/l)	WQC RDL WQA MCL (ug/l)	Chronic (ug/l)	Acute (ug/l)	Chronic (ug/l)	Acute (ug/l)	Chronic (ug/l)	In-Stream Criteria Water/Ornithina (ug/l)	DWS (ug/l)	Chronic (ug/l)	Water/Ornithina (ug/l)	DWS (ug/l)			
ANTHRONY	0.0	0.8	3.0												
ARSENIC	0.0	2.4	1.0	190.0	360.0	912.318	17381.97	4300.0	14.0	6.0	3050.564	993.2	425.0	2.0	
BERYLLIUM	0.0	0.1	1.0												
SELENIUM	0.0	4.0	2.0	5.0	20.0	261.416	965.665	4200.0	17.0	50.0	297962.1	12060.4	3547.2	4.0	
THALLIUM	0.0	0.0	1.0												
ACROLEIN	0.0	20.0	1.0												
ACRYLONITRILE	0.0	0.0	1.0												
BENZENE	0.0	1.0	1.0												
BROMOFORM	0.0	1.0	1.0												
CARBON TETRACHLORIDE	0.0	1.0	1.0												
CHLOROBENZENE	0.0	1.0	*												
1,1-DICHLOROBENZENE	0.0	1.0	*												
CHLOROETHANE	0.0	1.0	*												
2,2-DICHLOROMETHYL ETHER	0.0	1.0	*												
CHLOROFORM	0.0	3.0	0.5												
1,1-DICHLOROBROMOETHANE	0.0	5.0	1.0												
1,1-DICHLOROETHANE	0.0	2.0	1.0												
1,2-DICHLOROETHANE	0.0	5.0	1.0												
TRANS 1,2-DICHLOROETHYLENE	0.0	1.0	*												
1,1-DICHLOROBUTYLENE	0.0	1.0	1.0												
1,2-DICHLOROPROPANE	0.0	5.0	1.0												
1,3-DICHLOROPROPYLENE	0.0	5.0	1.0												
ETHYLENE	0.0	1.0	1.0												
METHYLBROMIDE	0.0	5.0	*												
METHYL CHLORIDE	0.0	1.0	1.0												
METHYLENE CHLORIDE	0.0	5.0	1.0												
1,1,2,2-TETRACHLOROETHANE	0.0	5.0	0.5												
TETRACHLOROETHYLENE	0.0	5.0	0.5												
TOUENE	0.0	5.0	1.0												
1,1,2-TRICHLOROETHANE	0.0	5.0	1.0												
1,1,2-TRICHLOROETHYLENE	0.0	1.0	0.2												
TRICHLOROMETHYLENE	0.0	2.0	1.0												
VINYL CHLORIDE	0.0	1.0	2.0												
POLYBROMOCHLOROPRENE	0.0	10.0	*												
2,4-DICHLOROPHENOL	0.0	5.0	*												
2,4-DICHLOROPHENOL	0.0	5.0	5.0												
2,4-DIBROMOPHENOL	0.0	10.0	*												
4-BROMO-2,4-DICHLOROPHENOL	0.0	10.0	24.0												
2,4-DINITROPHENOL	0.0	5.0	42.0												
2-NITROPHENOL	0.0	5.0	*												
4-NITROPHENOL	0.0	10.0	*												
2,4-DICHLOROPHENOL	0.0	5.0	5.0												
PHENOL	0.0	5.0	5.0												
2,4-BIS(4-CHLOROPHENYL) ETHER	0.0	2.7	2.7												
ACENAPHTHENE	0.0	10.0	*												
ACENAPHTHYLENE	0.0	10.0	2.3												
ANTHRACENE	0.0	10.0	0.7												
BENZENE	0.0	20.0	*												
BENZOPANTHRACENE	0.0	1.0	0.3												
BENZOPYRENE	0.0	1.0	0.3												
3,4-BENZOFURANTHENE	0.0	1.0	0.3												
BENZOCYCLOPENTADIENE	0.0	1.0	*												
BENZOKYFURANTHENE	0.0	1.0	0.3												
BIS(2-CHLOROPHENOXY) METHANE	0.0	5.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	1.0												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
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BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
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BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
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BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
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BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
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BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER	0.0	1.0	*												
BIS(2-CHLOROPHENOXY) ETHER</															

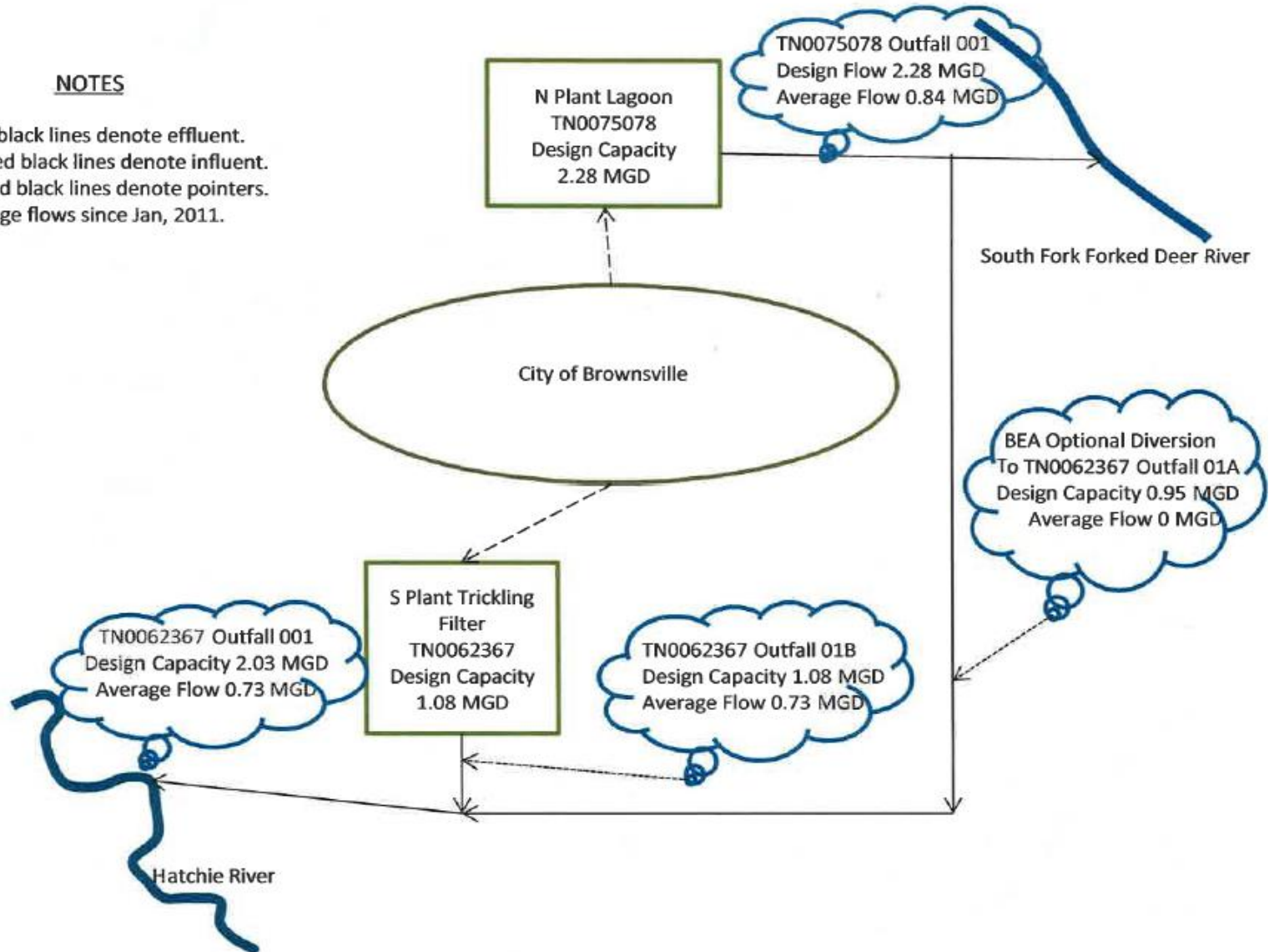
- a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. Reasonable potential does not exist for the following reason(s):

APPENDIX 5

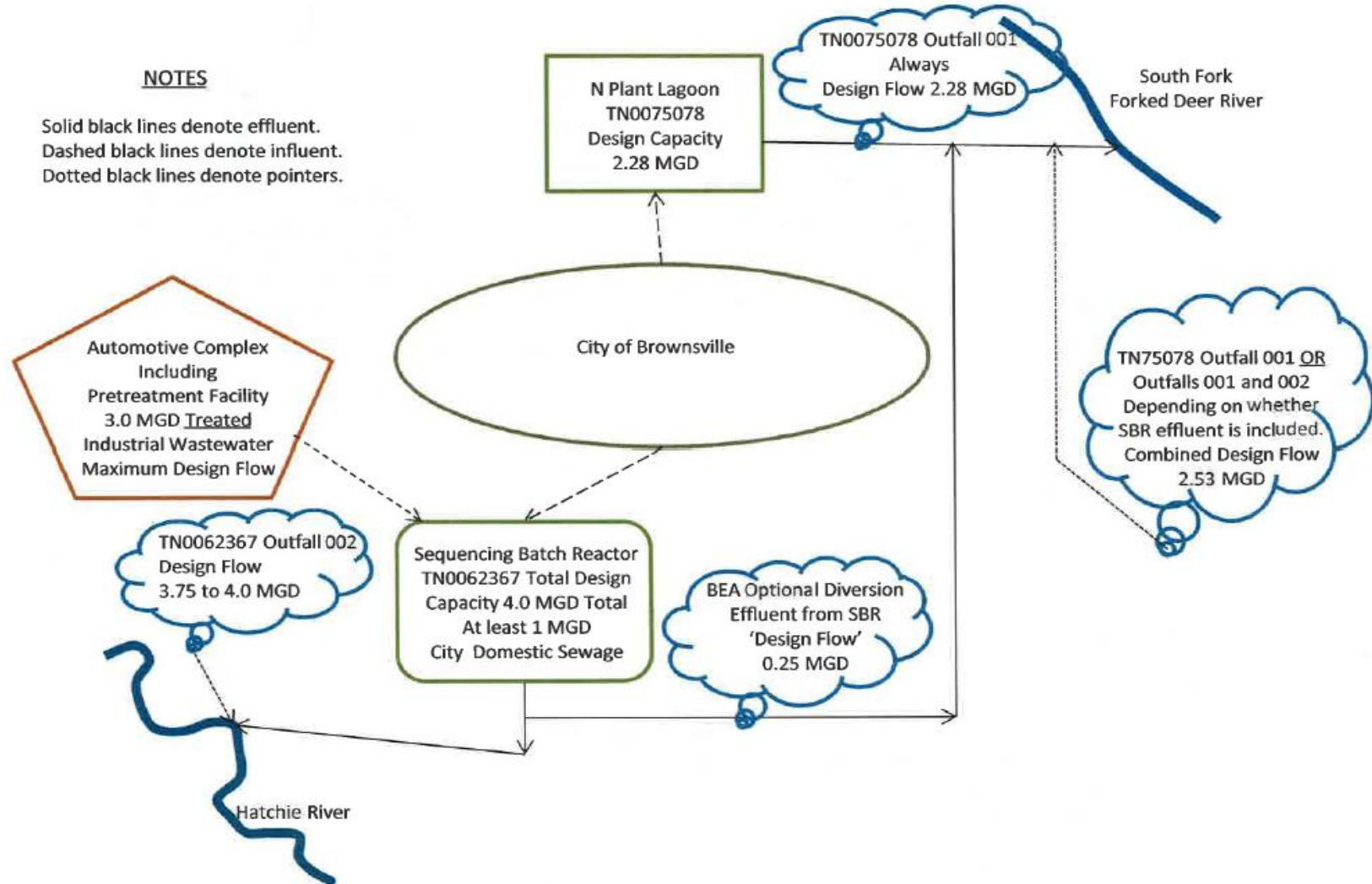
CURRENT AND FUTURE PLANT CONFIGURATION DIAGRAMS

Brownsville Energy Authority TN0075078 and TN0062367 Current Configuration

NOTES
Solid black lines denote effluent.
Dashed black lines denote influent.
Dotted black lines denote pointers.
Average flows since Jan, 2011.



Brownsville Energy Authority TN0075078 and TN0062367 Proposed Future Configuration



APPENDIX 6

Brownsville Proposed Overall Facility Vicinity Map

